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COPING FLEXIBILITY AND ACADEMIC RESILIENCE AMONG LOW-SES
COLLEGE STUDENTS

By

Benjamin J. Calebs
A.S., Asheville-Buncombe Technical Community College, 2014
B.A., University of Michigan, 2016
M.S., University of Louisville 2019

A Dissertation
Submitted to the Faculty of the
College of Arts and Sciences of the University of Louisville
In Partial Fulfillment of the Requirements
For the Degree of

Doctor of Philosophy
in Clinical Psychology

Department of Psychological and Brain Sciences
University of Louisville
Louisville, KY

May 2022

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A Dissertation Approved on:

February 14th, 2022

by the Following Dissertation Committee

Richard Lewine, PhD, Committee Chair

Bernadette Walter, PhD

Tamara Newton, PhD

Amanda Mitchell, PhD

Paul Salmon, PhD

DEDICATION

I would like to dedicate my dissertation to my grandmother, Lydia Alexander Roberts (1924-2018). She taught me many things over the years through her care, support, and encouragement, and my understanding of resilience was indelibly influenced by her. She is loved and missed.

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There are many people without whom this dissertation would not have been possible. I'd like to first express gratitude to my mentor, Dr. Richard Lewine. I had the good fortune of being able to receive both research mentorship and clinical supervision from him during my graduate studies and I feel I have benefitted greatly from his support and guidance. I would also like to thank Dr. Bernadette Walter for her support and guidance both as a member of my dissertation committee and as clinic director. I would also like to thank the rest of my dissertation committee members, including Dr. Tamara Newton, Dr. Amanda Mitchell, and Dr. Paul Salmon, for their support, feedback, and comments over the course of my dissertation. I would like to also thank my entire dissertation committee for their support and understanding with regard to my need to revise my dissertation owing to challenges with data collection associated with the COVID-19 pandemic. Overall, my dissertation has been strengthened through the combined expertise of the members of my dissertation committee and I'm very thankful for each member's time and effort throughout the dissertation process.

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Lastly, I've been extremely lucky to have the support and encouragement of my family, my friends, my partner, and my dog over the years. It is impossible for me to find a succinct and sufficient way to express the gratitude I feel to each of them, yet needless to say I would not have been able to make it this far without them. I hope that my work in some way honors the immense debt I owe to each of them.

ABSTRACT

COPING FLEXIBILITY AND ACADEMIC RESILIENCE AMONG LOW-SES COLLEGE STUDENTS

Benjamin J. Calebs

February 14th, 2022

College students coming from a background of poverty may experience academic impairment due to their experiences of chronic economic adversity. However, despite the stressors associated with poverty and the potential deleterious consequences of this form of adversity, many low-socioeconomic status (low-SES) college students show high academic achievement. One predictor of resilient outcomes that has been studied outside of academic contexts is coping flexibility, the ability to use a range of different coping behaviors to meet the demands of different stressful situations. Coping flexibility has been found to be positively associated with psychological adjustment in a variety of populations, yet it has not been studied as a predictor of academic outcomes, particularly for college students who come from a background of poverty.

The present study was undertaken with two primary aims: 1) to explore if coping flexibility was associated with academic resilience among low-SES college students, and 2) to further explore facets of coping flexibility to determine if each of the particular facets were significant predictors of academic outcomes for low-SES college students. The study used secondary data analyses and was exploratory in nature. It was hypothesized that greater coping flexibility would be associated with academically

resilient outcomes and that each of the facets of coping flexibility would be significant predictors of higher academic achievement. The sample consisted of low-SES college students ($N = 54$) at a large public research university who had an annual household income at or below 150% of the federal poverty line. Baseline data were collected at the beginning of the students' first year in college and academic outcome data [i.e., cumulative Grade Point Average (GPA)] were collected for eight semesters over the course of four years. Participants were categorized into different groups using hierarchical cluster analysis based on their scores on proxy measures of coping flexibility, including a measure of rumination as a proxy measure of emotion-focused coping and a measure of academic perseverance as a proxy measure of problem-focused coping. The sample was also split into two groups based on academic outcome data, including one group that showed academically resilient outcomes (i.e., maintaining a semester GPA of 3.0 or higher across all semesters) and one group that did not show academically resilient outcomes. The hypotheses were tested using a Fisher-Freeman-Halton Exact Test and Pearson bivariate correlations.

Five coping flexibility groups were found in the sample, including (a) a high coping flexibility group, (b) a moderate coping flexibility group with higher problem-focused coping, (c) a moderate coping flexibility group with higher emotion-focused coping, (d) a high problem-focused coping group, and (e) a moderate problem-focused coping group. The results from the statistical analyses showed that coping flexibility group was not significantly associated with an increased likelihood of being in the group showing academically resilient outcomes. It was also found that none of the facets of coping flexibility were significant predictors of last semester GPA. The findings taken

together showed that coping flexibility as measured in this study was not a significant predictor of academically resilient outcomes or academic achievement in the sample of low-SES college students. Although prior research has shown that coping flexibility is associated with psychological adjustment, it may be the case that flexibility is not as conducive to academic performance, particularly for low-SES college students. Some study limitations likely influenced the findings, warranting caution in making strong conclusions. Future research should further explore factors that promote positive academic outcomes for low-SES college students in order to help them achieve their full academic potential.

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INTRODUCTION

Researchers and clinicians have long been interested in how coping strategies influence the behavior, cognition, and emotion of individuals experiencing stress (Bonanno & Burton, 2013; Bonanno & Diminich, 2013; Cheng, 2001; Cheng et al., 2014). Different types of coping strategies have been described, such as problem-focused coping, emotion-focused coping, trauma-focused coping, and forward-focused coping (Bonanno & Burton, 2013; Bonanno & Diminich, 2013; Cheng, 2001; Cheng et al., 2014; Galatzer-Levy et al., 2012). Researchers have previously found evidence of associations between particular types of coping strategies and mental health outcomes (Cheng, 2001, Cheng et al., 2014; Galatzer-Levy et al., 2012). For example, individuals who frequently engage in *problem-focused coping* (i.e., focusing on the problems or demands posed by a stressful situation) have been found to have lower rates of psychological distress, while individuals who use more *emotion-focused coping* (i.e., focusing on managing the emotional response associated with a stressful situation) often have higher distress (Bonanno & Burton, 2013; Cheng et al., 2014).

In recent studies of coping behavior, researchers have begun to examine *coping flexibility*, which refers to flexibility in the use of different coping strategies in different stressful situations (Bonanno & Burton, 2013; Cheng, 2001, Cheng et al., 2014; Galatzer-Levy et al., 2012). Coping flexibility allows individuals to adapt to the particularities of a stressful experience, thereby helping them best manage the stress resulting from the

situation (Bonanno & Burton, 2013; Cheng, 2001, Cheng et al., 2014; Galatzer-Levy et al., 2012). Individuals who are able to flexibly apply different coping strategies have higher rates of well-being than individuals who use only one type of coping (Bonanno & Burton, 2013; Cheng, 2001, Cheng et al., 2014; Galatzer-Levy et al., 2012).

There has been considerable research exploring stress in student populations in higher education institutions (e.g., community colleges, colleges, and universities). These students experience stress related to the college setting, such as forming new friendships and relationships, academic demands of assignments and studying, and financial expenses associated with increased autonomy (Cassidy, 2016; de la Fuente et al., 2017; Freire et al., 2018; Galatzer-Levy et al., 2012; González-Torres & Artuch-Garde, 2014). Students also come to college with prior stressful experiences and face stressful events during college (Galatzer-Levy et al., 2012; Shigemoto & Robitschek, 2021). Approximately 66% of U.S. college students report having experienced a potentially traumatic event¹ (PTE) (Galatzer-Levy et al., 2012). Relatedly, students arriving at college with prior mental health issues have increased difficulty navigating the stressors of academic settings (Hartley, 2013)

Economic adversity² can be another significant stressor for many students. For students coming from the lower end of the socioeconomic status (SES) spectrum, the burdens of the college setting may be compounded. Low-socioeconomic status (low-SES) college students may have particular difficulties coping with PTEs as well as

¹ Researchers use the term “potentially traumatic event” to refer to an event in which an individual is at risk of serious harm or injury and which is likely to be perceived as life-threatening. Such events are part of the diagnostic criteria for Post-Traumatic Stress Disorder and are also called traumatic events or criterion A events (Bonanno, Westphal, & Mancini, 2011).

² Economic adversity refers to the broad set of stressors related to low levels of financial resources that low-SES students experience.

college-related stressors due to a lack of resources that can be marshalled to manage stressful experiences (Adams et al., 2016; Hébert, 2018; Jury et al., 2017; Morales, 2010; Sandoval-Hernández & Białowolski, 2016). At the same time, low-SES students may have had prior stressful experiences that made it necessary to learn and use various coping strategies to manage stress (Kitano & Lewis, 2005; Morales, 2010). The time during which low-SES students are pursuing a college degree may provide opportunities to both use previously-learned coping strategies and acquire new coping strategies that could be beneficial for managing future stressful experiences. Given the pronounced stressors faced by low-SES college students, it is important to consider the coping strategies that such individuals use and those from which they most benefit. By furthering the understanding of the dynamics of coping among low-SES college students, researchers, clinicians, and academic administrators may be better able to foster the well-being of such students while helping them attain their full academic potential.

The Impact of Economic Adversity on Academic Performance

According to recent estimates, approximately 37.2 million people live in poverty³ in the United States (United States Census Bureau, 2021). Poverty can be defined as having a family income below the federal poverty line, but is also often defined using socioeconomic status, a variable which can be conceptualized as a combination of family income, parental education, and parental occupation (Olszewski-Kubilius & Corwith, 2018). Economic adversity has been consistently found to have a negative influence on academic performance across age groups and levels of education (Olszewski-Kubilius &

³ Poverty refers to significant economic adversity. Although many low-SES students experience economic adversity, not all low-SES students experience poverty. Research on poverty, as a form of economic adversity, can offer insight into the impact of economic adversity on the functioning of low-SES students.

Corwith, 2018). Researchers have often focused on the impact of economic adversity during primary and secondary education (Olszewski-Kubilius & Corwith, 2018). There is substantial evidence of differences between low-SES and high-SES students in academic performance, with low-SES students showing lower levels of academic achievement than their high-SES peers (Jury et al., 2017; Olszewski-Kubilius & Corwith, 2018). Moreover, this academic achievement gap, which becomes noticeable in early childhood (Olszewski-Kubilius & Corwith, 2018), persists into early adulthood, as evidenced by lower graduation rates for low-SES college students (Adams et al., 2016; Jury et al., 2017). Indeed, longitudinal research on American college students focused on the association between SES and educational attainment found that 14% of college students from low-SES backgrounds completed a bachelor's degree or higher eight years after finishing high school, relative to 29% of students from middle-SES backgrounds and 60% of students from high-SES backgrounds (National Center for Education Statistics, 2015).

Researchers have identified different ways that economic adversity can influence student academic achievement. For example, students' achievement may be negatively impacted by poor nutrition and higher levels of stress associated with poverty (Olszewski-Kubilius & Corwith, 2018). Poverty is also associated with environmental factors that can influence academic achievement, such as family interactions, neighborhood safety, school quality, and access to mentors and adult role models (Olszewski-Kubilius & Corwith, 2018). Other variables that appear to contribute to the academic achievement gap include the amount of family resources invested in educational opportunities, exposure to reading and verbal knowledge, experiences in

nature, participation in extracurricular activities, team sports, family travel, and trips to museums (Olszewski-Kubilius & Corwith, 2018). For low-SES college students, evidence indicates that economic adversity experienced both before and during college can affect their academic performance and psychological well-being (Adams et al., 2016; Olszewski-Kubilius & Corwith, 2018).

Further, low-SES students may face significant barriers to participation in college settings that may further compound the achievement gap (Adams et al., 2016; Jury et al., 2017). Researchers have examined factors in the experiences of low-SES college students that may influence academic performance and well-being (Adams et al., 2016; Jury et al., 2017). In one cross-sectional study, Adams et al. (2016) looked at the relationships among perceived stress, financial strain, psychological symptoms, and academic and social integration among American undergraduate students ($N = 157$). The study included students from a range of socioeconomic backgrounds, with 51% identified as first-generation and 38% identified as low-income. Measures included the Financial Strain and Economic Support Measure (measuring financial strain), the Perceived Stress Scale (measuring perceived stress), the Inventory of College Challenges for Ethnic Minority Students (measuring academic and social integration), and the Brief Symptom Inventory (measuring psychological symptoms). Correlation and mediation analyses were performed to examine associations among variables. Significant associations were found between financial strain and first-generation status ($r = .30$), perceived stress and psychological symptoms ($r = .50$), perceived stress and academic and social integration ($r = .51$), and psychological symptoms and academic and social integration ($r = .52$). Perceived stress significantly mediated the relationship between financial strain and

psychological symptoms ($ab' = -.12$; 95% CI [-.25, -.01]) and between financial strain and academic and social integration ($ab' = -.12$; 95% CI [-.25 to -.01]) (Adams et al., 2016). The findings highlight the clear influence of financial strain and perceived stress on both psychological distress and academic and social integration, particularly among low-SES and first-generation students.

Additionally, in a review of the research on psychological barriers and person-environment mechanisms that may maintain the SES achievement gap, Jury et al. (2017) identified a number of obstacles faced by low-SES college students. The authors found that low-SES students experience greater levels of psychological distress and physiological stress (Jury et al., 2017). Low-SES students often experience difficulties with managing identity issues due to being an economic minority in college settings and frequently have to deal with negative class-related stereotypes that can impact their self-perception (Jury et al., 2017). The SES achievement gap can be influenced by economic disparities and the limited financial resources that low-SES students may put towards academic goals, as well as the limited cultural capital and experience with college environments (Jury et al., 2017). Furthermore, universities may select for and reward independent cultural values and behaviors, which may be inconsistent with the more interdependent values and practices of low-SES individuals (Jury et al., 2017). As these studies highlight, economic adversity and stressful experiences related to poverty can have negative consequences for low-SES students' academic achievement and mental health.

Academic Resilience Following Adversity

Despite the exposure to stress and economic adversity that low-SES students experience, many students show academic success. A number of studies have been conducted to identify and better understand factors that contribute to academic success despite adversity—or *academic resilience*—among low-SES students (Cassidy, 2016; Hébert, 2018; Morales, 2010; Rudd et al., 2021; Sandoval-Hernández & Białowolski, 2016). Academic resilience has been variously defined by researchers (Rudd et al., 2021), with some using the term to describe the general ability to deal with the stressful experiences encountered in academic settings (Cassidy, 2016), while others define it as the outcome of academic success despite stressors such as economic adversity or PTEs (Hébert, 2018; Morales, 2010; Sandoval-Hernández & Białowolski, 2016). As can be seen, academic resilience is often conceptualized as either an outcome trajectory or a dispositional trait or ability. Academic resilience is also defined in relation to a particular type of stressor. For example, some define academic resilience in relation to the common stressors experienced by students in educational settings (e.g., receiving a lower than expected grade on an assignment; Cassidy, 2016), while others define the construct in relation to stressors associated with economic adversity, such as having few financial resources that can be used for education (Hébert, 2018; Morales, 2010; Sandoval-Hernández & Białowolski, 2016). In spite of these different conceptualizations, research on academic resilience shares the common goal of learning which factors promote academic success amidst stressful environments.

In an effort to better understand the concept of academic resilience as a context-specific form of resilience, Cassidy (2016) developed and evaluated a measure called the

Academic Resilience Scale (ARS-30) using a sample of British college students ($N = 532$). The ARS-30 was designed to capture the adaptive cognitive-affective and behavioral responses that students may have in response to academic stress. To complete the ARS-30, participants are presented with a vignette describing a stressful academic situation and are asked how they would respond to the situation. An alternate version of the vignette describing another student experiencing academic stress was presented to a subgroup of the sample ($n = 211$) to assess discriminant validity. A significant mean difference was found between the scores for the original ARS-30 vignette and the alternate vignette ($d = .98$), suggesting good discriminant validity (Cassidy, 2016). Additionally, the General Academic Self-Efficacy Scale was used to assess concurrent validity. The measure showed good concurrent validity as evidenced by the association between ARS-30 scores and academic self-efficacy ($r = .49$). Correlations, factor analysis, and scale analysis were performed to examine data. Results revealed three factors for the ARS-30: (a) *perseverance*, (b) *reflecting and adaptive help-seeking*, and (c) *negative affect and emotional response*. Altogether, the results suggest that the ARS-30 appears to be an adequate measure of trait academic resilience.

Factors that appear to contribute to academic resilience among low-SES students have also been explored (Hébert, 2018; Morales, 2010; Sandoval-Hernández & Białowolski, 2016). Some researchers have used qualitative studies to identify resilience-promoting factors, including Hébert (2018) and Morales (2010). For example, Hébert (2018) conducted interviews with a sample of low-SES, first-generation American college students ($N = 10$) who showed high achievement both before and during college. The participants were interviewed about factors contributing to their capacity for

academic success, including their family background, their educational background, and their sense of self. Participants identified a number of factors from their childhood and adolescence that influenced their later academic achievement in college, including family adversity, difficult adolescent experiences, emotional support provided by teachers, rigorous high school curriculums, family pride, intellectual engagement, and college mentors. Supportive adults and rigorous academic settings both appeared to play particularly important roles in promoting academic resilience among low-SES students (Hébert, 2018).

Along similar lines, Morales (2010) sought to identify factors that promote academic resilience in a sample of low-SES, racial/ethnic minority students. In an effort to highlight the strengths of such students, Morales (2010) suggests that, given that low-SES and racial/ethnic minority students tend to experience increased stressors (e.g., economic adversity and discrimination), these students may in fact have access to more protective factors than their high-SES and White peers. The study was focused on the dynamic interactions among different resilience-promoting factors over the course of the students' lives, as little research has examined how resilience-promoting factors interact as they develop. Interviews were conducted with African American and Hispanic American students from low-SES backgrounds who showed academic resilience ($N = 50$) regarding their experiences prior to attending college that may have contributed to their academic success. Information on parental education and economic background was used to determine SES, while academic success was defined as having completed at least 30 college credits and having a minimum Grade Point Average (GPA) of a 3.0 (Morales, 2010).

Morales (2010) found two primary clusters of themes highlighting protective factors: (a) a cluster including willingness/desire to move up in social class, supportive and caring school personnel in primary and secondary school as well as college, having a sense of obligation to a racial/ethnic community, and having a strong orientation to the future; and (b) a cluster including having a strong work ethic, persistence, high self-esteem, internal locus of control, attending a different school that was out-of-zone, high expectations and support from parents, and maternal role modeling. Morales (2010) also examined how these factors interacted dynamically over the students' lives to contribute to resilient outcomes. For example, some students reported experiencing tension about their academic success due to concerns about betraying their community. In turn, their academic mentors then provided perspective on how these students' academic success could instead help their community. In another example, some students described how seeing the sacrifices that their parents made to support their education and get them into out-of-zone schools reinforced the students' work-ethic, persistence, and self-esteem (Morales, 2010).

Researchers have also compared students from low-SES backgrounds with students from high-SES backgrounds to determine what factors may uniquely contribute to academic resilience for low-SES students (Sandoval-Hernández & Białowolski, 2016). Sandoval-Hernández and Białowolski (2016) conducted a cross-sectional study to identify factors associated with academic achievement and academic resilience among eighth grade students in five Asian education systems ($N = 23,354$), including those in the countries of Japan ($n = 4,411$), South Korea ($n = 4,334$), Hong Kong ($n = 3,957$), Chinese Taipei ($n = 4,284$), and Singapore ($n = 6,368$). The aim was to identify factors

associated with academic achievement across SES groups and factors that are differentially associated with academic achievement for students from low-SES backgrounds. A large dataset from the Trends in International Mathematics and Science Study (TIMSS) from 2011 was used, which contains information on science and math achievement as well as information on students, teachers, and schools. Students showing academically resilient outcomes were identified as those who both were socioeconomically disadvantaged (i.e., having few resources at home relevant to education) *and* showed academic success (i.e., above average performance in mathematics). Logistic regression models created for each country were used to identify possible predictors of academic resilience.

Sandoval-Hernández and Białowolski (2016) found that academic success was predicted across both advantaged and disadvantaged students by positive student attitude to math (statistically significant for students from Chinese Taipei, Hong Kong, Japan, and Korea; β range across subsamples = .48-1.15), teacher confidence in student performance (students from Chinese Taipei and Korea; β range = .71-.90), student expectations of attending college (students from Chinese Taipei, Hong Kong, Japan, and Korea; β range = .73-1.54), and speaking the test language at home (students from Chinese Taipei; β = .68). A few predictors of academic success among the disadvantaged group (i.e., academic resilience) were found only in specific national contexts. Among Singaporean students, academic resilience was predicted by student expectations of attending college (β = .87) and amount of time spent on math homework (β = .54). Among South Korean students, academic resilience was predicted by gender (β = -1.02), with boys being more likely to show academic resilience than girls. Sandoval-Hernández and Białowolski

(2016) suggest that these findings highlight the importance of taking specific cultural contexts into account when examining academic resilience. For example, academic resilience appeared to be influenced by the specific cultural contexts of both Singapore and South Korea, where Confucian values with regard to learning, social harmony, and gender roles may influence the particular ways that academic success and resilience manifest (Sandoval-Hernández & Białowolski, 2016). Moreover, this study highlights the utility of comparing students who have experienced economic adversity with those who have not. In particular, its study design illustrates a methodologically-sound way of differentiating predictors of academic success for all students from predictors of academic resilience for low-SES students.

In a recent systematic review of the academic resilience literature, Rudd et al. (2021) examined the various ways that academic resilience has been defined and measured, many of which have been demonstrated in the previously described studies. The systematic review was focused on studies that measured academic resilience quantitatively and included 127 academic resilience studies using samples across the lifespan. The studies were examined using a thematic analysis approach in order to determine common themes in the ways academic resilience was measured and studied. The thematic analysis resulted in three primary thematic categories: (a) *a definition-driven approach*, where academic resilience was defined prior to running the primary study analyses typically using a combination of measures of adversity and of achievement; (b) *a process-driven approach*, where academic resilience was conceptualized as a dynamic interaction between the individual, their environment, risk factors, and protective factors; and (c) *a latent construct approach*, where academic

resilience was defined using self-report measures of characteristics thought to be indicative of the construct. The primary categories were broken down further into subcategories. For the definition-driven approach, one way of determining academic resilience was based on an individual being in an at-risk group and also being in a high-achieving group, thus leading to a categorical variable. Another way academic resilience was determined for the definition-driven approach was by being from an at-risk group and showing higher than predicted academic achievement. For the process-driven approach, individuals were either determined to be in an at-risk group prior to looking at the associations between protective factors and achievement, or risk and protective factors were included in the same model for predicting achievement. For the latent construct approach, academic resilience was measured either as a unidimensional construct or as a multidimensional construct.

Rudd et al. (2021) found that when researchers followed the definition-driven approach, they commonly compared a group showing academically resilient outcomes with a group showing non-academically resilient outcomes and looked for protective factors that might predict academic resilience. When following the process-driven approach, researchers commonly examined protective factors and risk factors directly and less frequently as mediators or moderators in the association with academic achievement. When following the latent construct approach, researchers would commonly create or use measures that capture characteristics theorized to be indicative of academic resilience and then look at associations between academic resilience and other variables of interest.

Rudd et al. (2021) highlighted a number of strengths and weaknesses of the different approaches to the measurement and study of academic resilience. The

researchers pointed out that the variability in the ways that academic resilience is defined and measured contributes to challenges with interpretation and comparison of the findings across various studies. They note that the definition-driven approach affords flexibility for researchers to determine conceptualizations of academic resilience that are specific and relevant to particular contexts, while also being less inclusive in the conceptualization of resilience given that studies often use only two groups, a resilient group and a non-resilient group, in their comparisons. Rudd et al. (2021) suggest that this latter issue is addressed by the process-driven approach, as it offers a broader framework for understanding academic resilience as a complex, dynamic process influenced by interactions among various factors. However, this strength of the process-driven approach is also argued to be a weakness, as the complexity makes it a less accessible and less interpretable framework through which to study academic resilience. They suggest that the latent construct approach, by relying on commonly available self-report measures, is relatively more accessible and easier to compare across samples and settings. However, it is pointed out that the latent construct approach may be a less valid method for conceptualizing academic resilience, as it appears to conflate aspects of protective factors with the desired academic outcomes and often lacks an adequate indicator of adversity or risk. Through this systematic review, Rudd et al. (2021) thus provide a helpful summary of studies on the quantitative measurement of academic resilience and highlight a number of important points for researchers to consider when conducting academic resilience research.

Overall, research on academic resilience shows both strengths and weaknesses. Measures of academic resilience that define resilience as a trait show some limitations.

For example, findings in support of the ARS-30 (Cassidy, 2016) as a useful measure of academic trait resilience appear weakened by the fact that stress was not directly measured. The ARS-30 may be more accurately viewed as assessing individual perceptions of academic resilience. Relatedly, the factors of the ARS-30 suggest that the scale may be confounded with other personality and behavior constructs (e.g., determination, coping, and neuroticism), which is a critical limitation of conceptualizing resilience as a trait. These points are echoed by Rudd et al. (2021) in their discussion of some of the limitations of the latent construct approach to measuring academic resilience. Despite such limitations, other researchers have identified multiple protective factors that appear to dynamically interact to promote resilient outcomes. Both Hébert (2018) and Morales (2010) highlighted a number of common themes related to academic resilience among low-SES students. Consistent themes across studies included having emotionally supportive school personnel, high expectations from both parents and teachers, attending schools or participation in programs that provide opportunities for intellectual engagement, having prior experiences of overcoming adversity, having family pride associated with the values many students learned from parents, and having supportive college mentors (Hébert, 2018; Morales, 2010). Given the increased interest in studying academic resilience across countries (Sandoval-Hernández & Białowolski, 2016), researchers are well-positioned to evaluate which aspects of academic resilience are culturally-specific and which are consistent across cultures. Furthermore, as Rudd et al. (2021) highlight, it is evident that researchers have a number of methods available for measuring and studying academic resilience, each with their different strengths and weaknesses. Despite the use of different conceptualizations and measures of academic

resilience, these studies provide useful perspectives on academic resilience and the factors that may promote it, particularly for low-SES students experiencing economic adversity.

Connections between Academic Resilience and Resilience

Important insights have been gained through the research on academic resilience and resilience-promoting factors in the context of academic stress and economic adversity (Cassidy, 2016; Hébert, 2018; Morales, 2010; Rudd et al., 2021; Sandoval-Hernández & Białowolski, 2016). Researchers have also looked at how individuals respond and adjust following exposure to acutely stressful experiences, such as PTEs (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011; Ellis et al., 2017). Interestingly, despite some similar goals and lines of inquiry, research on academic resilience and research on resilience in response to PTEs appear to only rarely be integrated (Bonanno & Diminich, 2013). Given that resilience-promoting factors identified in relation to one set of stressors may contribute to resilience in other domains, it is important to integrate these seemingly disparate literatures.

In a review of the resilience literature, Bonanno and Diminich (2013) make suggestions to help organize and increase theoretical clarity in resilience research. Research on the construct of resilience was originally focused on childhood development and exposure to chronically adverse environments, with resilience being defined as positive adjustment later in life once children are able to gain some distance from an adverse environment (Bonanno & Diminich, 2013). Over the past two decades, researchers began to look at resilience among adults after exposure to PTEs (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). Bonanno and Diminich (2013)

argue that these two different foci of resilience research have contributed to a number of conceptual ambiguities. To help clarify the distinctions between the two areas of resilience research, Bonanno and Diminich (2013) suggest distinguishing between two types of resilience: *emergent resilience* is when individuals show positive adjustment following experiences of chronic adversity such as poverty or childhood abuse; *minimal-impact resilience* is when individuals show relatively positive functioning both prior and subsequent to exposure to a PTE. Emergent resilience has been the focus of much of the developmental resilience literature, while research on minimal-impact resilience has largely focused on adult populations, although some researchers have focused on childhood experiences of PTEs (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011).

A number of limitations of research on outcomes following PTEs have been highlighted (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). Bonanno and Diminich (2013) argue that trauma researchers have traditionally focused on the presence or absence of psychopathology following PTE exposure. This psychopathology approach, which focuses on disorders such as Post-Traumatic Stress Disorder (PTSD), Major Depressive Disorder (MDD), and Complicated Grief, has stimulated necessary research, but is limited by its emphasis on categorical constructs that may not fully reflect the empirical evidence (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). Moreover, as psychopathological responses are only one category of outcomes following PTEs it is essential to elucidate the full range of experiences that individuals may have (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011).

For the purposes of examining outcomes following PTEs, a statistical technique known as latent growth mixture modeling has been particularly useful for identifying prototypical trajectories of distress and functioning (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). Six different trajectories in relation to PTE exposure have been identified: (a) *continuous distress* with high levels of distress before and after exposure, (b) *chronic distress* with post-exposure increase and maintenance of distress, (c) *delayed onset* with moderate distress increasing after an initial post-exposure period of reduction, (d) *recovery* with post-exposure moderate distress followed by eventual reduction, (e) *improvement* with moderate initial distress post-exposure followed by sharp decline, and (f) *minimal-impact resilience* with low levels of distress both before and after exposure (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). The relative proportion of individuals who experience different outcomes has been studied, with minimal-impact resilience appearing to be a common trajectory following PTEs, characterizing 35-65% of outcomes (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). Some researchers have found lower rates of minimal-impact resilience using different methodologies to identify trajectories of distress (Infurna & Luthar, 2016). For example, minimal-impact resilience rates in the context of losing a spouse have been found to be as low as 8% when multiple measures are used, thus highlighting a limitation of drawing conclusions from rates of resilience based on single measures (Infurna & Luthar, 2016).

Given the large portion of the population that has been found in some studies to show resilient outcomes and the consequent diversity of such a large subpopulation, a variety of factors would be expected to be associated with resilience (Bonanno, Westphal,

& Mancini, 2011). Some research on resilience-promoting factors is confounded by the fact that variables of interest are measured only after PTE exposure (Bonanno, Westphal, & Mancini, 2011). Despite such limitations, a number of predictors of minimal-impact resilience have been identified (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). Minimal-impact resilience has been found to be associated with variables such as older age; male gender; less severe PTE exposure; higher perceived control; higher trait resilience; lower negative affectivity; lower ruminative response style; higher trait self-enhancement; availability of economic resources; having previous experience with particular stressors; greater social support; higher levels of education; positive emotions; appraisal of events as challenges; trauma-focused coping; optimism; self-serving cognitive biases; emotional avoidance; coping flexibility; and expressive flexibility (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). Importantly, no single predictor appears to account for a significant share of the variance in outcomes and each predictor likely has a small impact that accumulates along with other resilience-promoting factors to contribute to minimal-impact resilience (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011).

In another review of the resilience literature, Ellis et al. (2017) highlight the advantages of taking an adaptation-based approach to understanding resilience. An adaptation-based approach to resilience is contrasted with what is described as *the deficit model of resilience*, which is characterized by an emphasis on the deleterious cognitive, affective, and behavioral consequences of childhood adversity. Ellis et al. (2017) note that the adverse impacts of poverty, abuse, and violent environments on childhood development have been well-established empirically, which has informed the

development of interventions aimed at countering the negative consequences of such experiences for children who have experienced adversity. However, the emphasis on deficits associated with experiencing adversity may obscure possible *stress-adaptive skills*, which develop in response to environments that are harsh and unpredictable that may have evolved to aid with survival and reproduction (Ellis et al., 2017). Ellis et al. (2017) propose that stress-adaptation research should evaluate two primary hypotheses: *the specialization hypothesis* focuses on how individuals who grow up in harsh, unpredictable environments may develop skills that are functionally adaptive in such environments; *the sensitization hypothesis* centers on the idea that the potential benefits of these functional adaptations will be most salient in contexts that mirror aspects of the original environments in which they developed. Further, it is argued that research on stress-adaptation should not be viewed as oppositional to research on the negative consequences of adversity, as the former can extend the latter through examining possible strengths of stress-adapted individuals (Ellis et al., 2017).

To begin investigating the two stress-adaptation hypotheses, Ellis et al. (2017) reviewed relevant literature in animal studies and human studies, both of which suggest that early stressors can lead to developmental changes that may be adaptive in later contexts. For example, food scarcity has been found to lead to increased associative learning and increased exploratory behavior among birds, while among rodents, maternal deprivation in early development has been associated with improved hippocampal functioning with regard to fear-conditioning in later stressful situations (Ellis et al., 2017). In human studies, individuals who had experienced childhood adversity have been found to have enhanced emotion recognition and empathic accuracy (Ellis et al., 2017).

Ellis et al. (2017) note that the concept of successful intelligence (i.e., intelligence defined as the set of skills needed to be successful and thrive in a particular environment) echoes some of their findings and interests, and in an extension of this, they suggest that the skills that make an individual successful in one environment may not always lead to success in other environments. Overall, this literature review shows how research on resilience could benefit from a fuller exploration of person-environment interactions.

As can be seen, researchers have made important contributions to the research on prototypical outcome trajectories following stressful experiences, resilience-promoting factors, and stress-adaptation (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011; Ellis et al., 2017). At the same time, some resilience researchers have been critical of the overemphasis on negative sequelae associated with stressful experiences, whether it is childhood adversity (Ellis et al., 2017) or PTE exposure in adulthood (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). Overall, this research shares many common goals and lines of inquiry with research on academic resilience, such as identification of resilience-promoting factors and exploration of how resilience-promoting factors develop over the life course. For example, Ellis et al.'s (2017) discussion of stress-adaptive skills seems to echo the suggestion made by Morales (2010) that individuals who have increased stressors (e.g., economic adversity for low-SES students or discrimination for racial/ethnic minority students) may develop a greater variety of protective factors in order to effectively cope with such stressors. The goal of using research on resilience to foster improvements in well-being and functioning for all individuals and an increased emphasis on strengths are other important areas of

convergence. Such efforts are particularly relevant for students from low-SES backgrounds, considering the many risk factors they experience.

As many researchers have noted, the field of resilience research is marked by significant conceptual ambiguity. One of the most significant sources of ambiguity revolves around the question of whether resilience is an outcome or a trait. It appears that the current evidence lends more support to an understanding of resilience as an outcome or process rather than a trait (Bonanno & Diminich, 2013). Another significant source of ambiguity revolves around the question of how adversity is defined in conceptualizations of resilience. The definition of academic resilience as showing academic success despite common stressors of the academic environment such as academic demands, challenges of forming new friendships and relationships, and the developmental demands of emergent adulthood (e.g., Cassidy, 2016) seems to already be captured by the construct of academic achievement. As such, adopting another term for the phenomenon of performing well in a college setting characterized by these stressors appears to add to the already prevalent conceptual confusion. Moreover, given the persistence of the educational achievement gap between low-SES students and high-SES students, it is important to have a way to describe those students who come from low-SES backgrounds, who experience the significant stressors associated with economic adversity, and who, in spite of these stressors, attain academically successful outcomes (e.g., Hébert, 2018; Kitano & Lewis, 2005; Morales, 2010; Rudd et al., 2021). Rudd et al. (2021) have outlined similar concerns and suggest having more precise definitions of academic resilience to delineate it from related constructs. Thus, using Bonanno and Diminich's (2013) framework, academic resilience may be characterized as a form of

emergent resilience defined whereby an individual overcomes persistent barriers and stressful experiences (e.g., economic adversity) to later show academically successful outcomes. This appears to be in line with the goals of resilience researchers who have sought to examine positive adjustment to evaluate if there are characteristics of these processes or resilience-promoting factors that may inform interventions aimed at helping those disadvantaged students who show less academically successful outcomes.

Resilience, Coping, and Academic Performance

One resilience-promoting factor that is consistently identified in the literature on resilience generally and academic resilience specifically is coping behavior (de la Fuente et al., 2017; González-Torres & Artuch-Garde, 2014; Hartley 2013; Kitano & Lewis, 2005). The associations among coping behavior, resilience, and academic performance have been examined in various populations, including at-risk youth and racial/ethnic minority youth in the U.S. (Kitano & Lewis, 2005), Spanish college students (de la Fuente et al., 2017; González-Torres & Artuch-Garde, 2014), and American college students with mental health issues (Hartley 2013). Researchers have additionally examined constructs that demonstrate associations with resilience, coping behavior, and their connections with academic performance. Such constructs include rumination (Krys et al., 2020; Lyubomirsky et al., 2003), personality traits of conscientiousness and neuroticism (Perera et al., 2015), and grit and perseverance (Credé et al., 2017; Duckworth et al., 2007; Farruggia et al., 2018; Thorsen et al., 2021).

Higher education settings are characterized by a number of significant stressors with which students must cope, such as the transition to adulthood, greater responsibilities, exams, time management, forming new friendships and relationships,

and navigating college systems (de la Fuente et al., 2017; González-Torres & Artuch-Garde, 2014). In research on resilience and coping and their associations with academic performance, resilience is often defined as a trait or capacity that helps an individual successfully navigate and adapt to stressful circumstances in a way that promotes well-being and functioning (de la Fuente et al., 2017; González-Torres & Artuch-Garde, 2014; Hartley 2013), yet there are some exceptions to the tendency to define resilience as a trait (Kitano & Lewis, 2005; Thorsen et al., 2021). Again, researchers define resilience in relation to different stressors such as academic stress (de la Fuente et al., 2017; González-Torres & Artuch-Garde, 2014), mental health issues (Hartley 2013), poverty (Kitano & Lewis, 2005; Thorsen et al., 2021), and family stress (Kitano & Lewis, 2005). A number of important associations have been highlighted in the extant literature on stress, coping, and resilience, which will be further discussed below.

To better understand the association between resilience and coping, Kitano and Lewis (2005) conducted a review of the developmental literature examining factors that appear to promote resilient outcomes for at-risk youth and racial/ethnic minority youth. Consistent with some prior research, Kitano and Lewis (2005) define resilience as a process or outcome whereby an individual shows an adaptive response to stressful experiences, with a primary focus on youth who have experienced chronic stressors, such as economic adversity, family stress, or discrimination. To begin, the authors note that intelligence has frequently been cited in the literature as a resilience-promoting factor, yet the process by which intelligence promotes resilience is unclear (Kitano & Lewis, 2005). Kitano and Lewis (2005) suggest that average or above average intelligence may support

resilience indirectly, as intelligence may be associated with a greater capacity to engage in effective coping behaviors in response to stressful events.

Relatedly, Kitano and Lewis (2005) argue that resilience is influenced by interactions among personality, coping styles, and the environment, which take place over time as youth are exposed to stressful situations requiring adaptation. Individuals may learn through experience what coping strategies work best and may develop increased self-efficacy when successful in applying appropriate coping strategies (Kitano & Lewis, 2005). Kitano and Lewis (2005) also highlight how patterns of coping behavior change across development, noting that as youth age they become better able to evaluate the quality of stressors in terms of how long they might persist and the associated degree to which they are controllable, flexibly consider different coping strategies and their likely effectiveness, and choose coping strategies that are appropriate to the context of the stressors. Moreover, evidence suggests that problem-focused coping and approach coping may be particularly helpful for youth and adolescents in responding to stressors (Kitano & Lewis, 2005).

Kitano and Lewis (2005) also review literature on the interactions between culture, racial/ethnic minority identity, coping behaviors, and resilience. Not only do coping strategies appear to be more or less effective depending on the particular context of the stressor, coping strategies differ in the degree to which they are effective for different groups (Kitano & Lewis, 2005). For example, biculturalism was found to be a protective factor for African American students (Kitano & Lewis, 2005). Also, having different coping strategies to deal with racism and discrimination has been suggested as a possible protective factor (Kitano & Lewis, 2005). As the review highlights, it is essential

to keep both developmental context and culture in mind when conducting research on resilience, coping, and academic performance.

In addition, studies on the associations among resilience, coping behavior, and academic performance have been conducted with college students (de la Fuente et al., 2017; González-Torres & Artuch-Garde, 2014). González-Torres and Artuch-Garde (2014) conducted an ex-post facto study to examine the association between trait resilience and coping strategies, as well as the roles of gender and type of university (i.e., secular or religious) in these associations in a sample of Spanish university students ($N = 117$). Students were considered resilient if they demonstrated academic success in the context of common stressors associated with academic environments. The Connor-Davidson Resilience Scale (CD-RISC) was used to measure trait resilience. Coping behavior was measured using the Coping Strategies Scale, which assesses both problem-focused coping and emotion-focused coping. Correlations, univariate ANOVA, and multivariate MANOVAs were performed to analyze the data.

González-Torres and Artuch-Garde (2014) reported that significant positive associations were found between problem-focused coping strategies (e.g., self-instructions and positive reappraisal) and resilience factors (r range = .29-.54) and between the spirituality factor of resilience and the emotion-focused coping strategy of religious support ($r = .63$). Gender and university were not found to have a significant effect on global resilience. However, women displayed higher levels of problem-focused coping and various factors of this dimension of coping than the men in this study. Also, an interaction effect was found for gender and type of university, with women at religious universities using problem-focused coping more, as well as particular factors of problem-

focused coping including cause-directed action and alternative reinforcement seeking. Overall, the students reported using problem-focused coping more than emotion-focused coping (González-Torres & Artuch-Garde, 2014). This study highlights the benefits of examining coping and resilience in the context of particular college settings and also highlights the benefits of including analyses of gender. However, the conclusions that can be drawn from this study are limited by the fact that stress, whether chronic or acute, was not measured. Although students reported using more problem-focused coping, it is unclear if such coping behavior was associated with reduced stress and positive adaptation.

Another ex-post facto study was conducted by de la Fuente et al. (2017) to evaluate the associations among resilience, learning approaches, coping strategies, and academic performance in a sample of Spanish university students ($N = 656$). Learning approaches are the different ways that students engage in the learning process, consisting of both motivations and strategies that can be deep (i.e., intrinsically motivated and focused on understanding the material) or surface (i.e., extrinsically motivated and focused on succeeding in evaluations). With regard to coping strategies, both problem-focused coping and emotion-focused coping were assessed. Measures included the CD-RISC (measuring resilience), the Revised Two-Factor Study Process Questionnaire (measuring learning approaches), and the Coping Strategies Scale (measuring coping behavior). Academic performance was assessed by using participants' exam grades, class attendance, and class participation. Correlations and structural equation modeling were performed to analyze data.

The results showed significant positive associations between trait resilience and deep learning ($r = .28$) and resilience and problem-focused coping ($r = .12$). A negative association was found between resilience and surface learning ($r = -.13$). The structural equation model results showed that resilience significantly predicted increased deep learning ($\beta = .32$), increased problem-focused coping ($\beta = .52$), and decreased emotion-focused coping ($\beta = -.27$). Interestingly, deep learning was found to negatively predict problem-focused coping ($\beta = -.24$), yet academic achievement was positively predicted by problem-focused coping ($\beta = .25$; de la Fuente et al., 2017). The results highlight the clear associations among trait resilience, coping, learning, and academic performance. The findings regarding the association between problem-focused coping and academic performance echo previous coping research and show how particular coping behaviors can contribute to improvements in academic functioning.

Some researchers have pointed out that, on top of academic stress, college students are experiencing increased mental health issues (Hartley, 2013). Individuals experiencing mental health issues may have difficulty managing the stressors of academic environments (e.g., academic demands and lack of social support) in conjunction with managing symptoms of psychological distress (Hartley, 2013). Such students, in turn, have higher rates of dropout and may require increased support and academic accommodations (Hartley, 2013). Hartley (2013) conducted a correlational study examining the associations among trait resilience, social support, mental health issues, and academic functioning among American undergraduate students ($N = 121$). Several academic variables were measured, such as cumulative GPA, time to credits completed, ACT scores, and high school GPA. Trait intrapersonal resilience was

measured using the CD-RISC, mental health issues using the Mental Health Inventory-5 (MHI-5), and social support/interpersonal resilience using the Social Support Questionnaire-6 (SSQ-6). Two hierarchical regression analyses were performed, one focusing on cumulative college GPA and another focusing on time to credits completed.

Hartley (2013) reported high school GPA was found to be the only significant predictor for cumulative college GPA ($\beta = .29$). It was also found that ACT scores ($\beta = .29$), number of hours worked ($\beta = .35$), mental health issues ($\beta = .55$), and trait resilience ($\beta = .96$) significantly predicted time to credits completed. A significant interaction effect was obtained, wherein there was a stronger relationship between trait resilience and time to credits completed for students with higher levels of mental health issues. Hartley (2013) suggests that for individuals with mental health issues, academic functioning may be less reliably predicted by common academic variables. The study illustrates the benefits of looking at both personality (e.g., trait resilience) and environment (e.g., social support) variables when examining resilience and academic performance. Yet, Hartley (2013) may have missed an opportunity to differently conceptualize academic resilience. Experiencing mental health issues in college could be considered a stressor that is beyond that typically experienced by college students. A student showing academic resilience could be defined as one who experiences the stress of mental health concerns who, despite these concerns, is able to attain academic success.

Another form of coping behavior that has received attention in relation to academic performance is rumination. Rumination refers to a way of coping with negative emotions that focuses on emotions through repetitive, passive thinking and behavior (Treyner et al., 2003). As such, rumination can be considered a form of emotion-focused

coping. Researchers have identified different aspects of rumination, including reflection and brooding, that have been found to have differential associations with psychological distress. Indeed, evidence indicates that brooding is associated with prolonged depressive symptoms and reflection is associated with reduced depression over time (Treynor et al., 2003). Additionally, researchers have examined how rumination relates to academic performance among college students and found similar variability in the association between rumination and academic performance (Krys et al., 2020; Lyubomirsky et al., 2003).

Lyubomirsky et al. (2003) found consistent evidence in three related studies with samples of American college students indicating that rumination about depressed mood—when compared with distraction from depressed mood—contributed to significantly greater impaired concentration when students attempted to engage in academic tasks. In the first study, participants ($n = 91$) were asked to read a GRE passage and were placed in one of three conditions: *a rumination condition*, where they were asked to focus on emotions and symptoms; *a distraction condition*, where they were asked to focus on different neutral words or phrases; and *a planning condition*, where they were asked to think about planning an unrelated activity. The participants completed measures of depression [i.e., the Beck Depression Inventory (BDI)] both before and after reading the passage, with this data being used to place the students in a dysphoric group (i.e., BDI scores ≥ 16) and a non-dysphoric group (i.e., BDI scores ≤ 3) to inform comparisons, thus resulting in six groups based on depression scores and study condition. Participants also completed measures of concentration impairment. In comparison with the five other groups, the dysphoric group in the rumination condition demonstrated the greatest

increase in depression, had the highest depression after the task, spent the most time reading the passage, returned to previous screens most often, and reported the highest scores on the concentration impairment measures, thus showing evidence of a negative influence of depressive rumination on concentration.

Lyubomirsky et al. (2003) performed a second study using a similar design to their first, with the omission of the planning study condition resulting in four rather than six subgroups. Also, instead of reading a passage, participants ($n = 54$) were presented with a video lecture to watch. The dysphoric-rumination group displayed the greatest increase in depression, had the highest depression after the task, spent the most time answering questions based on the video lecture, and showed the highest concentration impairment scores. Similarly, this provides further evidence of concentration difficulties resulting from depressive rumination. Lastly, in Lyubomirsky et al.'s (2003) third study, which consisted of similar subgroups to the second study as described above, participants ($n = 65$) were asked to both solve puzzles and proofread a passage of text. The third study provided further evidence of concentration impairment due to depressive rumination, with the dysphoric-rumination group again showing the greatest increase in depression, the highest post-task depression, the greatest concentration difficulties, and the lowest scores on the proofreading task. The three studies taken together provide strong evidence of how rumination, particularly in conjunction with depression, could be an ineffective coping strategy and could impair concentration in common tasks required of college students in academic settings.

However, other researchers have found evidence that, contrary to the findings regarding the associations among rumination, distress, and impairment as previously

described, rumination may in fact have adaptive aspects. Kryś et al. (2020) examined the associations among psychological distress, academic performance, and goal-directed rumination using a longitudinal study design with a sample of German university students ($N = 147$). In this study, goal-directed rumination was defined as repetitive thoughts about a goal discrepancy where a desired goal has not been attained. Academic performance was operationalized as performance on class exams. Data were collected at three different time points—each a week apart—prior to the administration of the class exams. Kryś et al. (2020) found that goal-directed rumination predicted later psychological distress. Further, their results showed that, after level of psychological distress was accounted for, rumination about goal discrepancies was positively associated with academic performance on the exams. The researchers suggest that goal-directed rumination can positively influence academic performance due to the added attention and resources associated with ruminating to address the goal discrepancy. However, they argue that this positive influence of goal-directed rumination can be negatively impacted by the presence of psychological distress. Taken together, the studies by Lyubomirsky et al. (2003) and Kryś et al. (2020) highlight how in academic settings, some aspects of rumination may be maladaptive, whereas other aspects may be adaptive. Furthermore, such findings mirror the research showing that different forms of coping behavior can be adaptive or maladaptive in different contexts.

Researchers have also examined other constructs that are associated with different types of coping behavior and resilience, and the associations of these constructs with academic performance. To begin, Perera et al. (2015) conducted a study examining the associations among conscientiousness, neuroticism, coping styles, academic adjustment,

and academic achievement in a sample of Australian college students ($N = 498$) in their first year of college. The researchers assert that their study was conducted in order to add to the literature on mechanisms in the association between personality and academic achievement, such as findings from a meta-analysis (Richardson et al., 2012) showing that conscientiousness had been found to be significantly correlated with GPA ($r = .19$, 95% CI [.17, .22]). The primary aim of Perera et al.'s (2015) study was to examine how coping styles, including primary control engagement coping (i.e., active, problem-focused coping) and narrow disengagement coping (i.e., avoidance and withdrawal coping), and academic adjustment might mediate the relationship between personality and academic achievement. Data were collected in waves over the course of the students' first semester and the hypotheses were tested using structural equation modeling.

Perera et al. (2015) found support for a number of their hypothesized direct effects and indirect effects. Conscientiousness was significantly associated with greater primary control engagement coping and reduced narrow disengagement coping, while neuroticism was significantly associated with reduced primary control engagement coping and greater narrow disengagement coping. Primary control engagement coping was significantly associated with higher academic adjustment, while narrow disengagement coping was significantly associated with reduced academic adjustment. Academic adjustment was also significantly related to greater academic achievement. Furthermore, they found that there was an indirect effect between conscientiousness and academic achievement through coping behavior and academic adjustment. Interestingly, although the researchers found that neuroticism was associated with lower academic adjustment and achievement through its association with coping behavior, the researchers

found a small, positive association between neuroticism and academic achievement. They theorized that this may reflect the phenomenon whereby some students experience anxiety or distress in an academic setting that may motivate greater attention, particularly when they do not disengage from academic pursuits. Overall, the results obtained by Perera et al. (2015) provide strong evidence of the mediating role that coping behavior plays in the association between personality and academic outcomes.

The construct of grit, highlighted and popularized by Duckworth et al. (2007), shows similarities with aspects of both coping behaviors (e.g., problem-focused coping) and resilience previously discussed, and extends the research on the association between personality and achievement. Grit is defined as a personality characteristic marked by a combination of perseverance in the face of challenges and passion for pursuing long-term goals (Duckworth et al., 2007). Of note, in a meta-analysis of the grit literature, Credé et al. (2017) argue that the construct of grit suffers from some conceptual and empirical issues. The authors highlight evidence that grit can be difficult to empirically distinguish from conscientiousness and it appears to possess a relatively small degree of predictive power for academic performance relative to other commonly identified predictors. Nonetheless, the researchers did find evidence in the extant literature that the perseverance facet of grit was more strongly related to academic performance than the consistent interest facet (Credé et al., 2017). Given that researchers who study the construct tend to situate the examination of grit firmly in the literature on personality factors that contribute to success, grit appears most similar to the conceptualization of resilience as a personality trait versus resilience as a trajectory which research on emergent academic resilience focuses on. The construct of grit does, however, appear to

be associated with a set of behavioral tendencies towards continuing to pursue goals despite challenges or setbacks, which mirrors problem-focused coping strategies. Thus, this highlights connections among the concepts of grit, perseverance in the face of challenges, and coping strategies.

Other researchers have found additional supportive evidence of the association between perseverance and academic performance (Farruggia et al., 2018; Thorsen et al., 2021). For example, Farruggia et al. (2018) examined non-cognitive predictors of academic performance (i.e., academic mindsets, perseverance, and time management) and retention between first and second years among college students. Their sample consisted of first-year American college students enrolled in a writing course ($N = 1,603$), with 70% of the participants being first- or second-generation immigrant students. In this study, academic mindsets were defined as a composite variable consisting of academic self-efficacy, academic motivation, and sense of belonging. To assess academic perseverance, the Perseverance of Effort subscale of the Grit measure was used. Academic performance was operationalized as first-term GPA, course grade for the writing class, and first-year credits earned. Using structural equation modeling, Farruggia et al. (2018) found that academic mindsets predicted perseverance ($\beta = .76$), which, in turn, predicted academic performance ($\beta = .17$); retention was then predicted by academic performance (Farruggia et al., 2018). The results provide evidence of the combined importance of academic mindsets and academic perseverance for academic performance and retention for college students.

Additionally, Thorsen et al. (2021) conducted a longitudinal study in a sample of Swedish compulsory school students (i.e., grades 1-9 in the Swedish educational system)

from low-SES backgrounds ($N = 1,665$) to examine if academic perseverance and interest were associated with academic resilience. The researchers compared students who showed academic resilience, defined for the purpose of this study as scoring above the country average on the Swedish National Exam, with those who did not show such resilience. They examined the associations among academic perseverance, academic interest, and academic resilience at grade 6 and over grades 6 and 9. Academic perseverance was measured using questions based on the perseverance facet of conscientiousness, and academic interest was measured for various academic subjects taught in the Swedish school system. The researchers found that students displaying academic resilience had greater academic perseverance and academic interest than their peers and that academic perseverance, academic interest, and their interaction predicted academic performance in a later grade. The researchers found that students who did not show academic resilience demonstrated less consistent associations among academic perseverance, academic interest, and academic performance.

Together, the studies by Thorsen et al. (2021) and Farruggia et al. (2018) provide evidence that academic perseverance serves as an important predictor of academic performance for students from diverse backgrounds, including low-SES students in Sweden (Thorsen et al., 2021) and American college students from immigrant backgrounds (Farruggia et al., 2018), echoing some of the studies previously discussed above that found a connection between perseverance and academic resilience (e.g., Cassidy, 2016; Morales, 2010). Furthermore, the studies on academic perseverance provide further insight into resilience-promoting factors that contribute to academic

performance and point to similarities and associations among the constructs of grit, academic perseverance, coping behavior, and resilience.

Although researchers have made important contributions to the understanding of the associations among resilience, coping, and academic performance, significant gaps in the literature remain. Much of the literature on resilience, coping, and academic performance is limited by imprecise definitions of resilience (e.g., de la Fuente et al., 2017; González-Torres & Artuch-Garde, 2014; Hartley, 2013). Also, some of the previously discussed studies were limited by the fact that stress, whether academic or of another type, was not directly measured (e.g., de la Fuente et al., 2017; González-Torres & Artuch-Garde, 2014), thereby reducing the ability to discuss implications for academic resilience research. Notably, few studies have specifically examined the associations among resilience, coping, and academic performance in low-SES college students. As can be seen, there are many areas for further research on the association between coping behavior and resilience, especially academic resilience.

Despite the limitations of some of these studies, the current research on coping, resilience, and academic performance has contributed insights useful for both future research and practical applications. For example, the study by de la Fuente et al. (2017) highlights the benefit of considering how academic performance and learning may be influenced by coping, while the study by Thorsen et al. (2021) provides useful insight into how the combination of perseverance and interest contributes to academic resilience over time, particularly for low-SES students. Further, the research on related constructs, such as rumination (Krys et al., 2020; Lyubomirsky et al., 2003), the personality traits of conscientiousness and neuroticism (Perera et al., 2015), and grit and perseverance (Credé

et al., 2017; Duckworth et al., 2007; Farruggia et al., 2018; Thorsen et al., 2021), provides further context for the understanding of how coping behavior relates with academic performance and academic resilience. Taken together, such studies could inform interventions aimed at improving academic functioning for students experiencing stressors such as economic adversity.

Coping Flexibility as a Construct

As Kitano and Lewis (2005) highlighted, when considering how at-risk youth develop and benefit from different coping behaviors, the degree to which a particular coping strategy is effective is significantly influenced by contextual factors. Cheng (2001) notes that although much research has focused on the adaptive aspects of problem-focused coping and the maladaptive aspects of emotion-focused coping, coping behaviors vary in different stressful situations. Moreover, Cheng (2001) argues that the degree to which a coping method is adaptive or maladaptive may depend more on the fit between coping method and context, rather than being solely determined by type. This observation has been taken further in research examining the resilience-promoting factor called *coping flexibility* (Bonanno & Burton, 2013; Bonanno, Pat-Horenczyk, & Noll, 2011; Cheng, 2001; Cheng et al., 2014). Cheng et al. (2014) define coping flexibility as variability in the use of different coping strategies in different stressful situations in such a way that facilitates an adaptive response to a situation. Coping flexibility has been measured in different ways and has been examined in relation to a range of stressors, from life transitions (Cheng, 2001) to PTEs (Bonanno, Pat-Horenczyk, & Noll, 2011). Coping flexibility appears to be consistently and positively associated with adaptive adjustment to adversity and stress (Bonanno & Burton, 2013; Bonanno, Pat-Horenczyk,

& Noll, 2011; Cheng, 2001; Cheng et al., 2014). However, beyond Kitano and Lewis' (2005) observations, coping flexibility has rarely been examined in the context of academic outcomes.

In a foundational set of studies on coping flexibility, Cheng (2001) explored the construct as it manifests in response to stressful life transitions. A primary aim of the studies was to create a reliable and valid method for assessing coping flexibility. Two processes that are considered fundamental to the construct are flexibility in the cognitive appraisal of the controllability of situations and flexibility in the coping method used to deal with situations (Cheng, 2001). Cheng (2001) sought to extend prior research and theory on coping flexibility by looking at both *strategy-situation fit* (i.e., the degree to which a particular coping method fits the controllability of a situation) and *goal attainment* (i.e., whether or not a goal is met using a particular coping method). A secondary aim was to identify different groups based on their flexibility in cognitive appraisal and coping behavior (Cheng, 2001). Cheng (2001) conducted three studies to investigate coping flexibility in relation to stressful life transitions. A multimethod approach was used, including both a self-report daily diary component and an experimental component. A measure of coping flexibility was developed called the Coping Flexibility Questionnaire (CFQ) and was used for both study components. The CFQ contains questions regarding the controllability of an identified stressful event, the type of coping used to deal with the stressor (i.e., problem-focused or emotion-focused), and the effectiveness of the coping behavior. The first study was conducted with Chinese freshman college students ($n = 100$). The CFQ was completed with reference to their first semester in college as the stressful life transition, along with measures to test

discriminant validity, including the State-Trait Anxiety Inventory (measuring anxiety), the Beck Depression Inventory (measuring depression), the Self-Monitoring Scale (measuring self-monitoring), and the Marlowe-Crowne Social Desirability Scale (measuring social desirability). Hierarchical cluster analysis was used to determine groups and group differences were analyzed using MANOVAs and independent sample *t*-tests.

The CFQ showed reasonable discriminant validity. Four groups were identified based on their patterns of appraisal and coping behavior: (a) *a flexible group* who showed both high appraisal flexibility and high coping behavior flexibility, (b) *an active-inflexible group* who viewed most events as controllable and used mostly problem-focused coping, (c) *a passive-inflexible group* who viewed most events as uncontrollable and used mostly emotion-focused coping, and (d) *an active-inconsistent group* who viewed most events as controllable and showed high coping behavior flexibility. The second study was conducted with Chinese college graduates ($n = 60$), who completed the CFQ with reference to their first full-time job. An experiment was also conducted with the participants involving a “controllable task” condition and an “uncontrollable task” condition. The CFQ was completed following the tasks. The third study was conducted with Chinese newlyweds ($n = 100$), who completed the CFQ with reference to their recent marriage experiences and also participated in the experiment component. The same groups from the initial study (i.e., a flexible group, an active-inflexible group, a passive-inflexible group, and an active-inconsistent group) were found again in the second and third studies. In addition, the results from the daily diary CFQ and the experimental CFQ were consistent across study components and the three studies.

Significant effects were found across studies for group (effect size range = .70-.80) and gender (effect size range = .22-.51). In the third study, a fifth group was identified, a *passive-inconsistent group*, who viewed most events as uncontrollable and showed high coping behavior flexibility. The flexible group was found to have greater situation-strategy fit than other groups across the three studies. Overall, the CFQ appeared to be a theoretically- and empirically-sound method for examining coping flexibility, and the studies provide strong empirical support for the coping flexibility construct and its connection with situation-strategy fit in relation to different stressful life transitions (Cheng, 2001). Moreover, the studies illustrate how coping flexibility is a dynamic process that can help individuals adapt to multiple stressors.

Relatedly, Bonanno, Pat-Horenczyk, and Noll (2011) also conducted a set of studies to develop a measure and explore the construct of coping flexibility. Following exposure to PTEs, individuals tend to engage in different types of coping methods and display variable capacity to use these coping methods to respond to the consequences of stressful experiences (Bonanno, Pat-Horenczyk, & Noll, 2011). Consistent evidence has found that *trauma-focused coping* (i.e., focusing on a PTE and processing the thoughts and feelings associated with the event) can help individuals work through the experience and associated distress (Bonanno, Pat-Horenczyk, & Noll, 2011). However, research on optimism, emotional avoidance, and distraction has shown how *forward-focused coping* (i.e., focusing on the future and other responsibilities) can also be adaptive when dealing with PTEs (Bonanno, Pat-Horenczyk, & Noll, 2011). To examine the construct of coping flexibility and to compare how it may impact stress relative to single types of coping behavior, Bonanno, Pat-Horenczyk, and Noll (2011) developed a measure called the

Perceived Ability to Cope with Trauma (PACT) scale. The PACT scale focuses on the perceived ability to cope with a PTE and may differ from other measures of coping behavior (e.g., daily diaries or momentary assessments). Bonanno, Pat-Horenczyk, and Noll (2011) argue that the perception of coping behaviors is an important area of study and note that perceived coping ability may be associated with personality-related beliefs about coping and/or post-hoc appraisals.

In order to evaluate the PACT scale and its psychometric properties, Bonanno, Pat-Horenczyk, and Noll (2011) conducted four correlational studies. The scale was pilot tested and refined to include two subscales of coping behavior: a *Trauma Focus* subscale, and a *Forward Focus* subscale. The PACT scale was administered to two samples used across the four studies, including a sample of Israeli undergraduate students ($n = 315$) and a sample of American undergraduate students ($n = 106$). To evaluate the validity of the PACT scale, participants from the Israeli sample were assessed using the Cognitive-Emotional Regulation Questionnaire (measuring self-regulation), the Experience in Close Relationship scale (measuring attachment style), the Trauma History Scale (measuring trauma exposure), and the Post-Traumatic Diagnostic Scale (measuring post-traumatic stress symptoms). Participants from the American sample were assessed using the Personal Views Survey (measuring hardiness), the ER89 (measuring ego-resiliency), the LOT-R (measuring optimism), the Marlowe-Crowne Social Desirability Scale (measuring social desirability), the NEO (measuring neuroticism and openness), friend-rated adjustment (measuring informant opinion of adjustment), and a stressful events checklist (measuring trauma exposure). In validating the measure, the researchers examined the relationships among the various questionnaires with each PACT subscale

as well as with a coping flexibility score calculated using the two subscales. Factor analysis, correlations, invariance testing, and hierarchical regression analysis were performed to analyze the data.

The PACT showed good discriminant and convergent validity across both samples. Both subscales independently predicted reduced post-traumatic stress symptoms following trauma exposure (Trauma Focus $\beta = -.11$; Forward Focus $\beta = -.17$; $R^2 = .18$), as did coping flexibility ($\beta = -.22$; $R^2 = .19$), showing that higher levels of coping flexibility were significantly associated with lower post-traumatic stress symptoms. Overall, the PACT scale appears to be a useful measure for assessing perceived coping flexibility, and the studies highlight the moderating role that coping flexibility can play in relation to stress (Bonanno, Pat-Horenczyk, & Noll, 2011). Notably, as the researchers mentioned, the PACT scale may be limited by the fact that it assesses perceptions of coping flexibility. It is unclear how the scale corresponds with other measures of coping flexibility such as the CFQ used by Cheng (2001), and there may be discrepancies between perceptions and behavior with regard to coping.

In order to deepen the understanding of the construct of coping flexibility, Cheng et al. (2014) conducted a meta-analysis to examine the relationship between coping flexibility and psychological adjustment. The primary aims of the meta-analysis were to evaluate the effect size of the link between coping flexibility and psychological adjustment and to explore possible moderators and influences on variability in results across studies. Two broad domains appeared to influence the results of studies: *conceptualization of coping flexibility* and *aspects of particular samples* with which studies have been conducted (Cheng et al., 2014). Cheng et al. (2014) outline five

primary ways that coping flexibility is defined: (a) *broad repertoire* refers to having a variety of different coping strategies available to use in response to stressful situations; (b) *balanced profile* refers to the equal use of different types of coping behaviors (e.g., problem-focused coping and emotion-focused coping); (c) *cross-situational variability* is characterized by the use of coping behaviors across different stressful situations; (d) *strategy-situation fit* involves the use of particular coping behaviors in response to a stressful situation that fit some significant characteristic of the situation (e.g., using problem-focused coping when one has control over the outcome); and (e) *perceived ability* refers to the individuals' subjective evaluation of their own capacity to respond flexibly to stressful situations in an adaptive way. Most studies used self-report questionnaires and a small proportion used either informant reports or experimental designs. Possible moderators of the relationship between coping flexibility and psychological adjustment included individualism, SES, age, and gender. The researchers hypothesized that the relationship would be stronger for subjects who were older, female, lower SES, and from less individualistic cultures (Cheng et al., 2014).

Cheng et al. (2014) found a final mean effect size for the association between coping flexibility and psychological adjustment of $r = .23$. Effect size varied according to how coping flexibility was conceptualized: $r = .12$ for both broad repertoire and cross-situational variability, $r = .19$ for balanced profile, $r = .27$ for strategy-situation fit, and $r = .32$ for perceived ability. Evidence was found of a weaker link between coping flexibility and psychological adjustment in more individualistic cultures and a stronger link between the variables for older adults. Neither gender nor SES appeared to be statistically significant moderators (Cheng et al., 2014). Altogether, these findings

suggest that coping flexibility may be best conceptualized as a combination of strategy-situation fit and perceived ability. This study provides strong evidence in support of the relationship between coping flexibility and psychological adjustment and highlights the moderating roles that culture and age can play.

Researchers have also expanded the theoretical framework surrounding coping flexibility (Bonanno and Burton, 2013; Cheng et al., 2014). Cheng et al. (2014) argue that coping flexibility consists of a complex interaction between cognition and behavior involving three primary stages: (a) *a planning stage*, in which goals and aspects of the situation are considered for strategy-situation fit, (b) *an execution stage*, in which the coping behavior is enacted and adapted, and (c) *a feedback stage*, in which monitoring of the effectiveness of coping helps to inform the other stages. Bonanno and Burton (2013) suggest that coping flexibility is one of a broader suite of capacities that they call *regulatory flexibility*, which they define as the variability in the use of regulatory strategies to adapt in response to stressful situations. In their theoretical framework, Bonanno and Burton (2013) similarly identify three primary facets of regulatory flexibility: (a) *context sensitivity* is the ability to be aware of characteristics of situations that may require regulatory responses and the situational factors that help determine which regulatory strategies may be most helpful; (b) *repertoire* is the variety of coping behaviors and emotion regulation strategies that individuals may be able to employ in response to stressful situations; and (c) *feedback* is the capacity to evaluate how effective a regulatory strategy is and to determine if another strategy should be deployed to manage a stressful situation.

In developing their theory of regulatory flexibility, Bonanno and Burton (2013) focus on coping behaviors and emotion regulation strategies. Prior research has operated from the perspective that some forms of coping behavior and emotion regulation are fundamentally ineffective and maladaptive while others are fundamentally adaptive and likely to contribute to adjustment, a perspective which Bonanno and Burton (2013) call *the fallacy of uniform efficacy*. Indeed, Bonanno and Burton (2013) argue that evidence suggests that the degree to which different regulatory strategies are helpful depends on the nature of the stressor and the context in which the stressful event occurs.

Bonanno and Burton (2013) suggest that the three facets of regulatory flexibility (i.e., context sensitivity, repertoire, and feedback) are components of a dynamic, interactive process that appears to be associated with positive adjustment following exposure to stressors. Bonanno and Burton (2013) highlight the inherent challenge of measuring and studying a construct such as regulatory flexibility, given that it is considered a trait characterized by dynamic patterns of behavior. For example, measuring context sensitivity poses many challenges, given that behavioral measures may make it difficult to distinguish appraisal from employment of a regulatory strategy (Bonanno & Burton, 2013). Research on context sensitivity highlights the utility of measures involving stressful situations that have been assessed and pre-rated by researchers prior to beginning a study (Bonanno & Burton, 2013). Repertoire has been conceptualized and measured as the number of strategies to which individuals have access, the temporal variability in the use of different regulatory strategies (e.g., Cheng, 2001), and the categorical variability in the types of regulatory strategies used (e.g., Bonanno, Pat-Horenczyk, & Noll, 2011). The authors note that research on repertoire can be limited by

the types of coping behaviors that are assessed. Bonanno and Burton (2013) also suggest that different patterns of regulatory flexibility may exist that are associated with different patterns of adjustment and note that regulatory flexibility could be associated with costs that could make it maladaptive in some contexts.

Overall, researchers have found substantial evidence of an association between coping flexibility and psychological adjustment (Bonanno, Pat-Horenczyk, & Noll, 2011; Cheng, 2001; Cheng et al., 2014). Moreover, researchers have also made significant efforts to advance the theoretical framework around coping flexibility (Bonanno & Burton, 2013; Cheng et al., 2014). The literature on coping flexibility is overall characterized by a high level of theoretical and methodological clarity, yet important discussions remain regarding how best to conceptualize the construct (Bonanno & Burton, 2013; Cheng et al., 2014). Following Cheng et al. (2014), evidence suggests that coping flexibility may be best conceptualized as either strategy-situation fit or perceived ability. Cheng's (2001) Coping Flexibility Questionnaire appears to be a methodologically-sound measure of strategy-situation fit, while Bonanno, Pat-Horenczyk, and Noll's (2011) Perceived Ability to Cope with Trauma scale appears to be a useful measure of perceived ability. Both conceptualizations and measures offer important insights into the dynamic processes implicated in coping flexibility.

Coping Flexibility, Resilience, and Academic Performance in College Students

Although researchers have yet to investigate the association between coping flexibility and academic resilience among low-SES college students, the relationship between coping flexibility and psychological adjustment among college students has been examined. College students experience many common stressors as they pursue a college

education, including changes in social support, increasing academic demands, and increased responsibilities with housing and finances (Galatzer-Levy et al., 2012). Many students are also exposed to PTEs during college (Galatzer-Levy et al., 2012; Shigemoto & Robitschek, 2021). Galatzer-Levy et al. (2012) note that the combination of these two broad types of stressful experiences can significantly increase the rates of psychological distress among college student populations. Coping flexibility among college students has been studied in the context of both academic stress (Freire et al., 2018; Gan et al., 2007) and PTE exposure (Galatzer-Levy et al., 2012; Shigemoto & Robitschek, 2021). To examine the role of coping flexibility for college students, studies have been conducted looking at associations between coping flexibility and variables including locus of control and college burn out (Gan et al., 2007); well-being (Freire et al., 2018); PTE exposure, social network characteristics, and psychological distress (Galatzer-Levy et al., 2012); and personal growth initiative, stress appraisal, and PTSD symptoms (Shigemoto & Robitschek, 2021).

To begin, Gan et al. (2007) conducted a cross-sectional study examining the relationships among coping flexibility, locus of control, and college student burnout in a sample of Chinese college students ($N = 273$). Prior research shows that academic burnout—characterized by exhaustion, cynicism, and issues with professionalism—is predicted by the personality construct of locus of control (Gan et al., 2007). Individuals who have an external locus of control tend to believe that they have no agency in events, while those with an internal locus of control tend to believe that events are the result of their own actions (Gan et al., 2007). In this study, the researchers defined coping flexibility as consisting of cognitive flexibility in interpreting the controllability of events

and variability in coping behavior such that the type of coping behavior fit the controllability of a situation (Gan et al., 2007).

The primary aim of the study was to compare coping flexibility with locus of control as predictors of burnout (Gan et al., 2007). Gan et al. (2007) also sought to examine whether effectiveness at attaining a goal was a fundamental part of coping flexibility as has been argued in previous research. Participants completed measures including the Maslach Burnout Inventory (measuring student burnout), the Internal-External Locus of Control Scale (measuring locus of control), and the CFQ (measuring coping flexibility). Correlations, structural equation modeling, and hierarchical regression analysis were performed to analyze the data. Results indicated that external locus of control was not significantly associated with burnout, yet a number of significant associations were found between dimensions of both coping flexibility and burnout. Specifically, significant, positive associations were found between controllability and exhaustion ($r = .15$), controllability and cynicism ($r = .17$), strategy-situation fit and professional efficacy ($r = .17$), and coping effectiveness and professional efficacy ($r = .38$). Negative associations were found between strategy-situation fit and exhaustion ($r = -.21$), strategy-situation fit and cynicism ($r = -.17$), coping effectiveness and exhaustion ($r = -.14$), and coping effectiveness and cynicism ($r = -.18$). Moreover, the results offered support for the hypothesized modified conceptualization of coping flexibility wherein coping effectiveness is not a significant component of the construct (Gan et al., 2007). Gan et al. (2007) point out that strategy-situation fit was not found to be a predictor of burnout, although participants may have had some difficulty categorizing the coping strategy. The study demonstrates how coping flexibility can impact academic outcomes

(e.g., student burnout). This is particularly relevant to low-SES students given the combination of academic stress and economic adversity experienced by such students.

Next, Freire et al. (2018) conducted an ex-post facto study exploring the relationship between coping flexibility and eudemonic well-being among Spanish university students ($N = 1,402$) dealing with academic stress. Few studies have focused on how coping relates to eudemonic well-being (Freire et al., 2018). Approach-based coping strategies have been previously identified as more adaptive than avoidance-based coping strategies (Freire et al., 2018). Given this, the primary aim of this study was to examine approach coping profiles among university students, while the secondary aim was to investigate the relationship between coping profiles and well-being (Freire et al., 2018). The participants completed the Coping Scale of Academic Stress Questionnaire (CSASQ; measuring coping flexibility) and the Ryff Scales of Psychological Well-Being (measuring eudemonic well-being). The CSASQ contains subscales of different coping methods: (a) *positive reappraisal*, (b) *support-seeking*, and (c) *planning*. The Ryff Scales of Psychological Well-Being contains four primary dimensions: (a) *self-acceptance*, (b) *personal growth*, (c) *environmental mastery*, and (d) *purpose in life*. Coping flexibility was defined as having higher levels of all coping strategies. Correlations, latent profile analysis, and a MANCOVA were performed to analyze data.

All coping strategies were found to be significantly related to well-being (r range = .23-.52). Six coping profiles were identified: (a) *high levels of all coping strategies*, (b) *moderately high levels of all coping strategies*, (c) *moderately low levels of all coping strategies*, (d) *low levels of all coping strategies*, (e) *high levels of support seeking only*, and (f) *high levels of both positive appraisal and planning*. Coping profile and well-being

were found to be significantly related ($d = .557$). Moreover, higher levels of coping strategies were found to be significantly related to higher levels of well-being, and the group with the greatest coping flexibility had the highest levels of well-being (Freire et al., 2018). Freire et al. (2018) note that the study offers insight into how university students cope with academic stress. However, stress was not directly measured, thus limiting the conclusions that may be drawn. Overall, despite this limitation, this study does provide a useful demonstration of the association between coping flexibility and psychological adjustment among the college student population.

Additionally, Galatzer-Levy et al. (2012) conducted a prospective study to examine the relationships among trajectories of psychological distress and coping flexibility, PTE exposure, and social network characteristics in a sample of American college students ($N = 155$). Despite the stressors of college settings, variability exists in the patterns of psychological distress that students experience (Galatzer-Levy et al., 2012). Galatzer-Levy et al. (2012) briefly reviewed a related previous study which found four primary trajectories that characterized students' distress during college: (a) *a stable resilient group* with consistently low levels of distress, (b) *a stable moderate distress group* with stable but non-clinical levels of distress, (c) *a high distress group* with consistently high levels of distress, and (d) *a distressed-recovered group* with initially high levels of distress that decreased over time. A semester effect was also found, whereby levels of distress varied across semesters, primarily for the stable resilient group and the high distress group (Galatzer-Levy et al., 2012).

Above all, the primary aim of Galatzer-Levy et al.'s (2012) study was to examine possible predictors of different distress trajectories. Participants completed measures

during their first semester as part of a four-year longitudinal study, including the PACT scale (measuring coping flexibility), the Symptom Checklist-90-Revised (measuring psychological distress), the Social Network Index (measuring social network size and social integration), and a life events checklist (measuring PTE exposure). Participants completed the measures of psychological distress and PTE exposure over the course of four years, reporting in each semester. Latent growth mixture modeling and multinomial logistic regression were performed to identify distress trajectories and evaluate the predictor variables.

Over the course of the four-year study, PTE exposure was reported at a consistent rate in the sample (first year = 32.9%; second year = 34.2%; third year = 30.4%). The stable resilient group was used as the reference group in the multinomial logistic regression when analyzing predictors for group membership. PTE exposure did not predict distress trajectory group, suggesting that students appear to exhibit similar patterns of distress and adaptation in response to both PTE exposure and more common college stressors. Further, coping flexibility was found to predict membership in both the stable resilient group and the stable moderate distress group. The high distress group and the distressed-recovered group were found to be less likely to use forward-focused coping, while the distressed-recovered group was also more likely to use trauma-focused coping. Social network characteristics were also found to be related to patterns in the high distress group, with greater social network size being related to greater fluctuations in distress across semesters and greater social integration being related to more stable patterns of distress over time (Galatzer-Levy et al., 2012). Overall, this study offers strong evidence of the influence of perceived coping flexibility on distress among college

students. The fact that stressful events, distress, and coping flexibility were measured as well as the prospective study design are significant strengths of this study.

Lastly, coping flexibility has also been studied in its associations with personal growth initiative, PTSD symptoms, and stress appraisal (Shigemoto & Robitschek, 2021). Shigemoto and Robitschek (2021) sought to examine the associations among these variables to test whether coping flexibility and stress appraisal predicted membership in empirically-determined groups using personal growth initiative and PTSD symptoms. Personal growth initiative (PGI) refers to a set of skills that are aimed at promoting a healthy lifestyle, including readiness for change, ability to plan, ability to use resources, and ability to act on intentions. The sample for the study consisted of college students who had experienced a PTE over the past five years ($N = 656$). Measures included the Life Events Checklist for DSM-5 (measuring potentially traumatic events), the PTSD Checklist for DSM-5 (measuring PTSD symptoms), the Personal Growth Initiative Scale II (measuring PGI skills), the PACT scale (measuring coping flexibility), the Stress Appraisal Measure (measuring stress appraisal), and the Present Control Over Stressful Events Scale (measuring sense of control). Finite mixture modeling and latent class regression analysis were used to examine the relationships among variables as predictors of group membership, with groups being based on participants' responses to the PGIS-II and the PCL-5.

Shigemoto and Robitschek (2021) found evidence for three different groups based on their personal growth initiative and PTSD symptom scores, including one subgroup with moderate PGI skills and moderate levels of avoidance symptoms of PTSD, another subgroup with low PGI skills and high overall levels of PTSD symptoms, and a final

subgroup with moderate PGI skills and low overall levels of PTSD symptoms.

Individuals in the first two groups were more likely to have experienced a greater number of types of traumatic experiences. When examining coping flexibility as a predictor of group membership, the researchers found that those with high levels of coping flexibility were more likely to be in the two groups with moderate PGI skills and low levels of PTSD symptoms. When including stress appraisal and controllability as predictors of group membership, those with higher levels of threat stress appraisal and who rated the stress as more central to their lives were less likely to be in the two moderate PGI skills and low PTSD symptom groups. In contrast, those with higher challenge appraisal were more likely to be in the moderate PGI skills and low overall PTSD symptoms group. Similarly, those with higher levels of sense of control were more likely to be in the two moderate PGI skills and low PTSD symptom groups. The findings point to a positive association between PGI skills and coping flexibility, with the researchers suggesting that coping flexibility and PGI skills may have aided individuals in adjusting following their traumatic experiences and contributed to reduced distress, particularly for those who had a greater number of types of PTEs. Overall, the study highlights the complex associations among coping flexibility, personal growth initiative abilities, stress appraisal, and PTSD symptoms.

Taken together, the outlined studies help to elucidate some of the dynamics of coping flexibility among students in college settings. As can be seen, in samples of college students, coping flexibility is associated with reduced psychological distress (Galatzer-Levy et al., 2012), improved well-being (Freire et al., 2018), reduced college burnout (Gan et al., 2007), greater personal growth initiative, and reduced PTSD

symptoms (Shigemoto & Robitschek, 2021). Given that academic performance would be expected to be related to psychological distress, well-being, burnout, and personal growth initiative, the studies are suggestive of likely connections between coping flexibility and academic resilience among low-SES students, and point to important areas for future research.

Summary

As can be seen, a wide range of research is pertinent to the goal of investigating coping flexibility and academic resilience among low-SES students. Research on coping flexibility, a consistently identified resilience-promoting factor, is quite relevant to the field of academic resilience research. Research conducted thus far on academic resilience and coping flexibility demonstrates both strengths and some limitations.

It is clear from the literature on poverty and academic achievement that economic adversity commonly contributes to negative outcomes, including both psychological distress and impairment in academic domains. Despite such strong evidence, research on academic resilience highlights how other trajectories of functioning exist among those individuals who have experienced economic adversity. Academic resilience, as a form of emergent resilience, refers to the phenomenon where individuals who have experienced adversity earlier in life (e.g., economic adversity, PTEs) attain normative or even improved academic functioning later in life despite such adverse experiences.

Recognizing the potential benefits of the resilience framework, researchers have made important efforts to identify those factors that may promote resilient outcomes for individuals in response to a variety of stressors. Coping flexibility is one of the many resilience-promoting factors that appear to help individuals adapt following stressful

experiences, whether acute (e.g., PTEs) or chronic (e.g., poverty). For example, Galatzer-Levy et al. (2012) identified the significant roles that coping flexibility and social support play in helping college students manage distress related to both common stressors of college settings as well as more severe PTEs.

Research on both coping flexibility and academic resilience is in its initial stages and thus many questions and areas for further exploration remain. For example, Galatzer-Levy et al. (2012) note that future investigations of coping flexibility would benefit from inclusion of other possible predictor variables, inclusion of functional outcome measures such as GPA, and use of measures taken prior to college. Relatedly, research on the negative impacts of economic adversity on academic performance would benefit from further investigation of possible factors that promote academic resilience, such as coping flexibility. Furthermore, research on the intersections of coping flexibility and academic resilience among low-SES college students has the potential to broaden the understanding of how humans adapt to stressful environments and to inform efforts aimed at addressing the deleterious consequences of economic adversity and the academic achievement gap.

Present Study

In an effort to address some of the gaps in the research literature, the present study was conducted to explore the association between coping flexibility and academic resilience among college students from a low-SES background. Despite the strong evidence of links between economic adversity and academic performance and between coping flexibility and psychological adjustment, no studies have examined these potential associations. Given that low-SES students have all experienced economic adversity, they

are an important population in which the potential association between coping flexibility and academic resilience may be explored.

Given the dearth of research on coping flexibility among low-SES students, and in particular its potential association with emergent academic resilience, the present study examined this construct in a low-SES student sample to determine whether coping flexibility is associated with academic performance. To investigate these associations, secondary data analyses were conducted and the study was exploratory in nature. A unique, longitudinal dataset was used that contains baseline psychological measures administered to a low-SES student sample in their first year of college as well as four years of data of the students' academic performance throughout their undergraduate education. Data were collected from the beginning of the fall 2016 semester to the end of spring 2020 semester. The study participants were recruited through their participation in an educational grant program for students who came from low-SES backgrounds characterized by having an annual household income at or below 150% of the federal poverty line. The study began by distinguishing between two groups in the sample: one group of low-SES students that demonstrated high academic performance and another group of low-SES students that demonstrated lower academic performance. Coping flexibility was determined based on existing measures in the dataset that served as proxy measures for problem-focused coping and emotion-focused coping. The two academic performance groups were compared in their levels of coping flexibility to test for an association between coping flexibility and academic resilience. It is believed that findings from such an investigation could help broaden the understanding of coping flexibility as a

potential resilience-promoting factor for students who have experienced economic adversity.

Research Questions and Hypotheses

Aim 1: The first aim of the present study was to explore the association between coping flexibility and academic resilience in a sample of low-SES college students. To accomplish this aim, the relationships were examined using a measure of coping flexibility developed for the study composed of proxy measures of problem-focused coping [i.e., the Academic Perseverance subscale of the Beginning College Survey of Student Engagement (BCSSE; Gonyea et al., 2006)] and emotion-focused coping [i.e., the Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003)]. Academic resilience was determined using a frequency count of the semesters with GPAs at or above 3.0 and was operationalized as having maintained a cumulative GPA of 3.0 or greater across all semesters included in the dataset.

Research Question 1: What is the association between coping flexibility and academic resilience?

Hypothesis 1: It was hypothesized based on prior research on coping flexibility that individuals and groups with greater coping flexibility would be more likely to be in the group showing academically resilient outcomes (i.e., maintaining a GPA of 3.0 or greater across all semesters).

Aim 2: The second aim of the present study was to further explore the association between coping flexibility and academic resilience in a sample of low-SES college students to determine whether both aspects of coping flexibility were significant predictors of academic performance. To accomplish this second aim, relationships were

again examined using the proxy measures of problem-focused coping (i.e., the Academic Perseverance subscale of the BCSSE; Gonyea et al., 2006) and emotion-focused coping (i.e., the RRS; Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003). Specifically, the variables academic perseverance, reflection rumination, and brooding rumination were examined as potential predictors of academic performance. Academic performance was operationalized as final cumulative GPA.

Research Question 2: What are the associations between aspects of coping flexibility and academic performance?

Hypothesis 2: It was hypothesized based on prior research on coping flexibility and academic performance that both problem-focused coping (i.e., academic perseverance) and emotion-focused coping (i.e., reflection rumination and brooding rumination) would be significant predictors of final cumulative GPA.

METHOD

Participants

The sample for the present study consisted of college students from a large public research university who came from a low-SES background. To participate in the original study for which the data were collected, participants had to meet the following eligibility criteria: 1) be at least 18 years old at the beginning of the study, 2) be enrolled full-time or part-time as a college student, and 3) have an annual household income at or below 150% of the federal poverty line.

Recruitment

Participants were recruited through their participation in an educational grant program organized through a large public research university in collaboration between the Principal Investigator and the grant program staff. The educational grant program provided students from low-SES backgrounds with full funding for their undergraduate education for four years, covering the costs of tuition, room, board, and books. To be eligible for the educational grant and to participate in the program students had to have an annual household income at or below 150% of the federal poverty line, and also had to meet a number of other requirements as part of the grant application process, including being a resident of the state where the university is located, completion of the Free Application for Federal Student Aid (FAFSA), having a completed financial aid file, meeting additional grant requirements, meeting the general admission requirements for

the university, submission of an essay, having an ACT composite score ≥ 20 , and having a high school GPA ≥ 2.5 .

Procedures

All procedures for the study were approved by the Institutional Review Board at the University of Louisville. Data for the study were collected from the beginning of the fall 2016 semester to the end of spring 2020 semester. Baseline data were collected using a packet of questionnaires containing both the demographic measures and psychological measures during an orientation meeting of the previously described educational grant program at the beginning of the first academic year of the students' enrollment and attendance at the university. The Principal Investigator and the original research team collaborated with grant program staff to introduce the study to potential participants, consent participants, and administer the baseline questionnaire packets. Potential participants had the opportunity to learn about the nature of the study (e.g., the purpose of the study, the components of the study, contact protocol for the study, and the potential risks and benefits of participation) to assess interest in participation. Interested individuals were then consented to participate in the study, with an informed consent document being provided along with the baseline questionnaire packet. Participants were provided enough time to complete the baseline questionnaire packets before returning these to the Principal Investigator and research team.

As part of the consent procedure, participants provided consent to have academic transcript data and academic survey data collected by the Principal Investigator and research team in collaboration with the grant program staff. The academic survey data had been previously collected by university staff as part of routine admission procedures,

but was only made available for the study at the end of the first semester in which participants were enrolled in the study. The first round of academic transcript data was also collected at the end of the first semester. Participants were sent reminder letters during this first round of academic data collection. The letters also provided participants an opportunity to withdraw consent for continued participation, with no participants choosing to discontinue. Academic transcript data were collected by the Principal Investigator and research team after each subsequent semester for the duration of the study.

To ensure data security and confidentiality, all data collected via the baseline questionnaire packets were de-identified prior to data entry. In addition, academic transcript data and academic survey data were only accessed by the Principal Investigator and de-identified prior to data entry by the research team. The Principal Investigator was the only member of the research team who had access to information that would connect the different data components.

Measures

A demographic questionnaire and psychological measures were administered at baseline. The academic survey was administered by university staff prior to the start of participants' first academic year and accessed at the end of the first semester in which participants were enrolled in the study. Academic transcript data, including GPA, were collected over the course of four years at the end of each semester.

Demographic Questionnaire

Participant demographics were assessed using a demographic questionnaire administered at baseline. Participants were asked a number of demographic questions,

including about age, sex/gender, race/ethnicity, annual household income for family household, parent/primary caregiver educational attainment, high school GPA, and ACT score. Sex and gender identity were only assessed with one item on the demographic questionnaire and did not make a distinction between sex and gender. As such, the sample characteristics contained one category to reflect the sex and/or gender identity reported by the participant (i.e., termed sex/gender). For high school GPA, some participants provided GPAs ranging higher than 4.0, likely resulting from taking advanced classes. The GPAs were modified to a 4.0 scale in order to be consistent with the university GPA scale. Other items were included on the demographic questionnaire but were not reported in the present study as they were not considered relevant to the study research questions.

Coping Flexibility

Coping flexibility has been defined as the capacity to use different coping strategies (e.g., emotion-focused coping and problem-focused coping) for different stressful situations. Although no direct measures of coping flexibility were included in the baseline questionnaire packets [e.g., the PACT (Bonanno, Pat-Horenczyk, & Noll, 2011) or the CFQ (Cheng, 2001)], the dataset was examined for measures that resembled aspects of coping behavior that could serve as proxies. As such, coping flexibility was assessed using proxy measures of problem-focused coping and emotion-focused coping available in the dataset. Specifically, problem-focused coping was measured using the Academic Perseverance subscale of the Beginning College Survey of Student Engagement (BCSSE; Gonyea et al., 2006), which was found to show similar content on the face of the items to the construct of problem-focused coping. Emotion-focused coping

was measured using the Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003), which was found to show similar content on the face of the items to the construct of emotion-focused coping. Scores on each measure were calculated separately and were then used to determine coping flexibility. Coping flexibility was operationalized as having high scores on both proxy measures, which suggests high frequency or high certainty of engaging in different coping behaviors. Following the procedure outlined by Cheng (2001) for determining coping flexibility groups, the scores were used to define different groups based on level of coping flexibility.

Beginning College Survey of Student Engagement

The Beginning College Survey of Student Engagement (BCSSE; Gonyea et al., 2006)—specifically the Academic Perseverance subscale of the BCSSE—was used to assess the problem-focused coping component of coping flexibility. The BCSSE is a 45-item measure which assesses students' past academic behavior in high school and academic expectations of college at the start of their first year of higher education. The BCSSE is typically administered to incoming students either prior to or at the beginning of their college education. The BCSSE contains ten subscales measuring different aspects of academic behavior and academic expectations. In particular, the Academic Perseverance subscale includes 6 items assessing students' beliefs about their ability to engage in different behaviors to focus on academics and cope with challenges over the coming year. As the subscale includes items mentioning both challenges and responses, it appears to most closely match the problem-focused coping component of coping flexibility. In this measure, respondents are asked how certain they are they will be able

to engage in different coping behaviors to deal with problems associated with academic settings (e.g., “Study when there are other interesting things to do;” “Ask instructors for help when you struggle with course assignments”). The Academic Perseverance subscale uses a six-point Likert scale, with 1 = Not at all certain and 6 = Very certain. Average scores can be calculated for the Academic Perseverance subscale. Higher average scores on the Academic Perseverance subscale of the BCSSE suggest greater perceived certainty that one will be able to engage in different behaviors to cope with challenges and focus on academics. The Academic Perseverance subscale has demonstrated good validity and reliability. For instance, this subscale recently displayed good internal consistency ($\alpha = .81$) in a sample of first-year college students (Paulsen & Cole, 2019). In the present study, reliability analyses for the measure indicated that internal consistency was adequate ($\alpha = .73$).

Ruminative Responses Scale

A revised version of the Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003) was used to assess the emotion-focused coping component of coping flexibility. The original RRS is a 22-item self-report measure of an individual’s general tendency to engage in ruminative thinking and behavior in the context of negative emotions. Respondents are specifically asked questions about how frequently they engage in different behaviors or have different thoughts when they feel depressed. Treynor et al. (2003) revised the original 22-item measure to remove items that appeared to be confounded with items on common depression scales. The revised RRS thus contains 10 items. Further, Treynor et al. (2003) found that the measure contained two different subscales, each containing 5 items that capture different aspects

of rumination. The *Reflection* subscale measures the tendency to contemplate one's negative mood in a neutral manner. A sample item from this subscale is: "Analyze your personality to try to understand why you are depressed." The *Brooding* subscale measures the tendency to think negatively about how one's life is lacking in different ways. A sample item from this subscale is: "Think 'What am I doing to deserve this?'" Importantly, the researchers found in a community sample of American adults ($N = 1,130$) that the *Brooding* subscale was associated with prolonged depressive symptoms while the *Reflection* subscale was associated with reduced depression over time (Treyner et al., 2003). The RRS uses a four-point Likert scale, with 1 = Almost never and 4 = Almost always. Sum scores and average scores can be calculated for each rumination subscale and for the measure overall. Higher scores on the RRS suggest greater frequency of engaging in ruminative thinking and behavior. The RRS has demonstrated good reliability and validity in community samples. For instance, in one community sample it displayed excellent internal consistency ($\alpha = .90$) and adequate test-retest reliability ($r = .67$; Treyner et al., 2003). In the present study, reliability analyses revealed that the RRS had excellent internal consistency for the full scale ($\alpha = .91$) and good internal consistency for both subscales (*Brooding* subscale $\alpha = .89$; *Reflection* subscale $\alpha = .88$).

Academic Resilience

Academic resilience was determined using data on participants' academic performance collected over the course of eight semesters across four years of the students' undergraduate education. Specifically, academic performance was assessed using participants' Grade Point Average (GPA). GPA is a common measure of academic performance that ranges from 0 to 4.0 with higher GPA reflecting better academic

performance. At the end of each semester, students receive a letter grade that corresponds to a numerical value along the 0-4.0 scale for each course they have taken. GPA is calculated by averaging the values across courses based on the letter grades earned in each course. A student's cumulative GPA is the average across all courses they have taken since being enrolled as a college student.

Academic resilience was determined by looking at the trajectories of the cumulative GPAs at the end of each semester for each participant, counting the number of semesters the participants had a cumulative GPA of 3.0 or greater, and using this data to categorize participants into either a group demonstrating academically resilient outcomes or a group not demonstrating academically resilient outcomes. For the purposes of the present study, college students who showed academically resilient outcomes were defined as those participants who maintained a cumulative GPA of 3.0 or greater across all semesters *and* who came from a background of poverty. This operationalization is similar to that used by other researchers (e.g., Morales, 2010) and is an example of what Rudd et al. (2021) have described as a definition-driven approach to measuring academic resilience.

Statistical Analyses

Data Reduction and Approach to Analyses

All data were collected either via paper administration of study measures or by the Principal Investigator being provided access to participants' academic records in collaboration with the educational grant program staff. Data were transferred from their original format to Microsoft Excel and then to IBM SPSS Statistics Version 27 for data cleaning, data reduction, and analysis.

The dataset was examined for missing data before both group determination and checking for assumptions. No missing data were found for the participants' rumination responses and scores or academic perseverance scores. When examining the semester cumulative GPA, there were 14 participants who had semesters over the four years for which cumulative GPA was missing. It appeared that the missing data were likely due to a participant not being enrolled during a semester. In examining the data further, there was evidence that a number of participants dropped out of college over the course of the study as they showed multiple consecutive semesters lacking GPA data. For the purpose of Aim 1, this missing data would not impact inclusion in the analysis given that group determination was based on a frequency count of semesters with cumulative GPA at or above 3.0. Those participants who were missing cumulative GPA data were thus not included in the group demonstrating academically resilient outcomes but were included in the analyses as part of the group not showing academically resilient outcomes.

For the purpose of Aim 2, the analysis required participants to have a cumulative GPA for the last semester in which the data were collected as cumulative GPA was the outcome variable. It was found that 13 participants did not have a cumulative GPA at the end of the last semester in the dataset. As with the missing data discussed previously, it is possible these participants had either not enrolled during this semester or had dropped out. It is also possible that the missing data were related to the COVID-19 pandemic, which began during the last semester included in the dataset. Due to the analysis requirements, those participants that showed missing data for last semester cumulative GPA were excluded from the analysis for Aim 2, leaving a sample size of 41 for analysis.

Sample Characteristics

Demographic variables were analyzed to determine sample characteristics. Frequencies and percentages were reported for categorical demographic variables. Means, ranges, and standard deviations were reported for quantitative demographic variables.

Group Determination

Following the procedure described by Cheng (2001) for determining groups based on the CFQ, hierarchical cluster analysis was used to define groups based on the results from the proxy measures of coping behaviors. Hierarchical cluster analysis is a method by which distinct groups are identified in a set of data (Cheng, 2001). Specifically, participant scores from the Academic Perseverance subscale of the BCSSE (Gonyea et al., 2006) and from the RRS (Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003) were used in the hierarchical cluster analysis. Again, following the procedure described by Cheng (2001), when conducting the hierarchical cluster analysis to determine the coping flexibility groups, squared Euclidean distance was used for clustering data and Ward's method was used for grouping. It should be noted that making a determination of the number of groups via hierarchical cluster analysis can be challenging as the results from such an analysis can provide support for a range of solutions. As such, groups were determined through a consideration of the data and the hierarchical cluster analysis results, theoretical grounding, and clarity of interpretation.

The academic performance data were used to split the sample into a group demonstrating academically resilient outcomes and a group not demonstrating academically resilient outcomes. As discussed above, an academically resilient outcome

was defined as maintaining a cumulative GPA of 3.0 or greater across all semesters *and* coming from a background of poverty. Specifically, each participants' grades were examined across semesters and were used to categorize the participant into the group that demonstrated academically resilient outcomes or the group that did not demonstrate academically resilient outcomes.

Descriptive Statistics

The primary variables of interest were analyzed using descriptive statistics. Frequencies and percentages were reported for categorical variables. Means, ranges, and standard deviations were reported for quantitative variables. Descriptive statistics were examined for the full sample as well as for the different groups based on coping flexibility and academic resilience.

Preliminary Analytical Procedures

Prior to conducting the primary statistical analyses, the data were examined using descriptive analyses to determine whether the required assumptions for running the primary analyses were met. For both primary analyses, the statistical tests required considerations of sample size. The assumptions that needed to be met for the primary analysis for Aim 1, which was a non-parametric test, included: random sampling, independence, and having expected frequency counts ≥ 5 in at least 80% of the cells. A number of additional assumptions needed to be met for the primary analysis for Aim 2, which was a parametric test. To determine whether assumptions were met for the analysis for Aim 2, descriptive analyses were used to examine the data for linearity, outliers, and multicollinearity, as well as normality, linearity, and homoscedasticity for the residuals.

If it were discovered that statistical assumptions were not met for the primary analyses, alternative tests were considered and used where possible.

Tests of Hypotheses

Aim 1

In order to examine the association between coping flexibility and academic resilience, a χ^2 test of independence was proposed to be used. Both of the primary variables of interest for Aim 1 are categorical. The independent variable for the analysis was the coping flexibility group based on the hierarchical cluster analysis of the coping flexibility scores. The dependent variable was the academic resilience group based on the trajectories of cumulative GPA across semesters for the participants. The χ^2 test of independence is an appropriate statistical test for examining the potential association between categorical variables. Such an analysis would be able to identify if there were a significant association between the two categorical variables. If there were indeed a significant association between the variables of interest, then the results would be further examined. To determine the direction of the associations (i.e., which groups appear to be most related) the cell percentages would be examined. To determine the strength of the association, an effect size would be calculated.

Aim 2

In order to further examine the associations between the different components of coping flexibility and academic performance, a multiple linear regression was proposed to be used. For the purpose of Aim 2, the coping flexibility components and academic performance were treated as continuous variables. The predictor variables for the analysis were the scores on the Academic Perseverance subscale of the BCSSE (measuring

academic perseverance), the Brooding subscale of the RRS (measuring brooding rumination), and the Reflection subscale of the RRS (measuring reflection rumination). The outcome variable was cumulative GPA. A multiple linear regression would be able to identify whether or not each of the facets of coping flexibility were significant predictors of academic performance as measured by cumulative GPA. Furthermore, if it were found that the model produced from the multiple linear regression analysis was significant, then the analysis would allow for comparisons of the potential impact of each facet of coping flexibility using the coefficients from the results. This would determine whether all of the independent variables were contributing equally to the association or if there were some that were driving the association more than others. Such an analysis would also provide another way to explore if coping flexibility is more conducive to positive outcomes than any single type of coping behavior.

Power Analyses

To help determine the appropriate sample size for the statistical analyses, G*Power version 3.1.9.4 was used to conduct an *a priori* power analysis. The statistical analysis for Aim 1 was used to determine the type of power analysis, as this was the primary aim of the study. Although no research has examined the association between coping flexibility and academic resilience, previous research on coping flexibility and psychological adjustment was used to inform the power analysis. In a meta-analytic study, Cheng et al. (2014) found a small to medium mean effect size for the association between coping flexibility and psychological adjustment of $r = .23$. When determining the number of groups based on daily coping flexibility, Cheng (2001) found four to five groups with different patterns of cognitive appraisal and coping behaviors. Following this

research, a small to medium effect size of $w = .23$ with four groups for coping flexibility was used in a power analysis for a χ^2 test of independence. With two academic resilience groups and four coping flexibility groups, the degrees of freedom were 3. The power analysis for a χ^2 test with the previously mentioned values ($w = .23$, $\alpha = .05$, power = .80, $df = 3$) resulted in an estimated required sample size of 207.

RESULTS

Sample Characteristics

The sample for the present study consisted of 54 college students from a large public research university who came from a low-SES background. At baseline, most of the participants were 18 years old. The sample was predominately female (61.1%) with approximately one-third male (35.2%) and two individuals identifying as genderfluid (3.7%). For race/ethnicity, 57.4% identified as White/European, 13.0% as African American/Black, 5.6% as Hispanic/Latino/a, 9.3% as Asian/Pacific Islander, and 14.8% as Multiracial. One participant had missing data for the primary item but then provided data suggesting a Multiracial race/ethnicity on a related item, so was included in the percentage for Multiracial. Participants also provided information on annual household income for their family household, with 37% reporting an annual income of less than \$9,999, 27.8% with an annual income of \$10,000-\$19,999, 25.9% with an annual income of \$20,000-\$39,999, and 1.9% with an annual income of \$40,000-\$59,999. Participants also indicated the highest level of education achieved by their parents or primary caregivers, with the majority (72.2%) reporting that their parents/primary caregivers did not hold a college degree. The average ACT score for the sample was $M = 25.89$ ($SD = 3.59$) and the average high school GPA was $M = 3.63$ ($SD = .37$). Please see Table 1 for full sample characteristics.

Group Determination

For determining the coping flexibility groups, the data were analyzed using hierarchical cluster analysis. The analysis was run with the inclusion of average academic perseverance as measured using the Academic Perseverance subscale of the BCSSE as a proxy measure of problem-focused coping and average rumination as measured using the Ruminative Responses Scale as a proxy measure of emotion-focused coping. Ward's method was used for grouping and Squared Euclidean distance was used for clustering the data. The analysis was run with two groups to five groups. The lower limit for this range was chosen as the minimum number of groups that might show evidence of being meaningfully distinguishable in terms of coping flexibility, while the upper limit for the range was chosen based on previous research (e.g., Cheng, 2001) that found four to five coping flexibility groups across different samples. For each classification, the means for academic perseverance and rumination were compared across the groups. It should be noted that the scores for academic perseverance showed a limited range in the sample (range = 3-6), while the range for the rumination scores was larger. As such, when looking to identify and categorize the groups it was possible to distinguish between low, moderate, and high rates of rumination, yet it was only possible to distinguish between moderate and high rates of academic perseverance.

After reviewing the results, the five-group solution was the only one that showed a distinct group that could be considered a high coping flexibility group. This group showed high mean scores on both proxy measures of coping behavior, i.e., academic perseverance and rumination. As such, the groups in the five-group solution consisted of the following: (a) *a high coping flexibility group* with high rumination and high academic

perseverance; (b) *a moderate coping flexibility group with higher problem-focused coping*, showing moderate rumination and high academic perseverance; (c) *a moderate coping flexibility group with higher emotion-focused coping*, showing high rumination and moderate academic perseverance; (d) *a high problem-focused coping group* with low rumination and high academic perseverance; and (e) *a moderate problem-focused coping group* with low rumination and moderate academic perseverance.

The two-group solution revealed evidence of a high academic perseverance/low rumination group and a high rumination/moderate academic perseverance group. The three-group solution displayed the same high rumination/moderate academic perseverance group, but also resulted in a low rumination/moderate academic perseverance group and a low rumination/high academic perseverance group. The four-group solution included a low rumination/moderate academic perseverance group, a high rumination/moderate academic perseverance group, a low rumination/high academic perseverance group, and a moderate rumination/high academic perseverance group. Please see Table 2 for the means and standard deviations for rumination and academic perseverance resulting from the different group classification solutions. Please also see Table 3 for the sample characteristics broken down by the five coping flexibility groups in the five-group solution.

For determining the academic resilience groups, the academic data were examined for each semester included in the dataset. For each participant, the total number of semesters showing a cumulative GPA equal to or greater than 3.0 were added up. As discussed above, those semesters for which data were missing were not included in the final count. Following this, those participants with eight semesters of maintaining a

cumulative GPA of 3.0 or above were categorized into the group demonstrating academically resilient outcomes. The remaining participants were categorized into the group that did not obtain academically resilient outcomes. This resulted in there being 21 individuals in the group showing academic resilience and 33 individuals in the group that did not show academic resilience. Please see Table 4 for the sample characteristics broken down by academic resilience group.

Descriptive Statistics

Descriptive statistics were examined at both the level of the full sample and at the group level. The full sample showed moderate to high academic perseverance ($M = 4.92$; $SD = .63$) as well as moderate brooding rumination ($M = 2.04$; $SD = .80$), moderate reflection rumination ($M = 1.78$; $SD = .83$), and moderate overall rumination ($M = 1.91$; $SD = .76$). The average last semester cumulative GPA for the full sample was 3.20 ($SD = .50$). Please see Table 5 for further information on the full sample.

When examining the coping flexibility groups, the high coping flexibility group showed an average last semester cumulative GPA of 2.88 ($SD = .43$) and the moderate coping flexibility/higher problem-focused coping group showed a similar GPA of 2.90 ($SD = .67$). The moderate coping flexibility/higher emotion-focused coping group showed a higher GPA than the two previous groups ($M = 3.26$; $SD = .40$), which was comparable to the GPA for the moderate problem-focused coping group ($M = 3.22$; $SD = .52$). The highest last semester cumulative GPA was found for the high problem-focused coping group ($M = 3.34$; $SD = .44$). Please see Table 6 for further information about the sample classified by coping flexibility group.

When comparing the two academic resilience groups that were determined based on the trajectories of GPAs, results indicated that both groups demonstrated moderate academic perseverance, with the group not showing academic resilience having slightly greater levels of academic perseverance ($M = 4.98$; $SD = .68$) than the group showing academic resilience ($M = 4.82$; $SD = .53$). In contrast, the group showing academic resilience appeared to have lower levels of overall rumination ($M = 1.64$; $SD = .69$) than the group not showing academic resilience ($M = 2.08$; $SD = .76$). Please see Table 7 for further information about the sample classified by academic resilience group.

Preliminary Analytical Procedures

The data were examined prior to running tests of hypotheses and examining results in order to evaluate the statistical assumptions for the analyses. Based on the estimated sample size of 207 from the *a priori* power analysis, the sample size of 54 was too small for detecting differences for the primary analysis for Aim 1 and likely too small for the analysis for Aim 2. As was previously discussed, the study used secondary data analyses with a completed dataset, and data were collected from the beginning of the fall 2016 semester to the end of spring 2020 semester. As such, it was not possible to add to the sample to better align with the recommended sample size based on the power analysis. Despite this limitation, the present study was continued given the exploratory nature of the study.

In examining the histograms for each variable for normality, there appeared to be evidence of skewness for some variables. The distributions for both reflection rumination and brooding rumination appeared to be left-skewed. The distribution for academic perseverance appeared to be approximately normal, while the distribution for cumulative

GPA appeared approximately normal with some evidence of right skewness. The Shapiro-Wilk statistic was also consulted for determining normality. For both brooding rumination and reflection rumination, Shapiro-Wilk was statistically significant, with both variables showing $p < .001$. Shapiro-Wilk was also significant for cumulative GPA with $p = .016$. Shapiro-Wilk was non-significant for academic perseverance ($p = .258$), indicating evidence that this variable was indeed approximately normally distributed.

The analysis for Aim 1 consisted of several assumptions. To begin, one assumption that needed to be met for the analysis for Aim 1 was random sampling. The participants were recruited from the educational grant program aimed at supporting students who came from a background of poverty, and thus could be viewed as a random sample of low-SES students who possess a likelihood of good academic performance. Another assumption that needed to be met was independence of observations. The responses for each individual participant were not influenced and each participant only appeared once in the cells across the groups, thus meeting the assumption of independence. The final assumption for the χ^2 test of independence that needed to be met was having expected frequency counts ≥ 5 in at least 80% of the cells. After determining the expected frequency counts based on the five coping flexibility groups and the two academic resilience groups, it was found that four of the ten cells had counts below 5, and thus only 60% of the cells had counts at the amount required to meet this assumption. As such, the data showed evidence of violating this assumption.

For the statistical assumptions for the analysis for Aim 1, some of the assumptions were met, while others were not. In particular, the last assumption associated with the expected frequency counts was not met. Based on this, it was decided that an alternative

non-parametric test would be considered for examining the potential association between coping flexibility and academic resilience. When working with categorical data and small sample sizes, particularly when there are violations of assumptions, one alternative test that can be used is Fisher's Exact Test. Fisher's Exact Test is typically used for analyses involving 2x2 contingency tables, yet an extension of this test known as the Fisher-Freeman-Halton Exact Test (Freeman & Halton, 1951) can be used when there are more than 2 levels or groups for each categorical variable. As such, the Fisher-Freeman-Halton Exact Test was considered as an appropriate alternative for testing the hypothesis that increased coping flexibility was associated with academic resilience.

Descriptive analyses were used to further examine the data for linearity, outliers, and multicollinearity, as well as normality, linearity, and homoscedasticity for the residuals, in order to check for meeting assumptions for conducting the analysis for Aim 2. Specifically, these assumptions were examined for the variables of academic perseverance, brooding rumination, reflection rumination, and last semester cumulative GPA. As has already been mentioned, two of the independent variables (i.e., reflection rumination and brooding rumination) to be used in the multiple linear regression analysis, as well as the outcome variable (i.e., cumulative GPA), showed evidence of skewness in their distributions. As such, there appeared to already be evidence of violation of some assumptions necessary for the statistical analysis.

Next, the assumption of linearity was checked using scatterplots for each independent variable with cumulative GPA as the dependent variable. Each scatterplot showed an approximately linear relationship between the independent variables and the dependent variable. Pearson bivariate correlations were also used to further examine the

assumption of linearity between each of the independent variables and cumulative GPA. Although examination of the scatterplots suggested evidence of linearity, examination of the Pearson bivariate correlations revealed that none of the associations between the independent variables and the dependent variable were statistically significant. As such, there appeared to be evidence of violation of the assumption of linearity. Please see Table 8 for the Pearson bivariate correlations for the variables.

The data were then examined both for univariate outliers and for multivariate outliers. In examining the data for univariate outliers, boxplots were created for each of the variables of interest, including academic perseverance, brooding rumination, reflection rumination, and last semester cumulative GPA. No outliers were detected for the independent variables. However, cumulative GPA showed some evidence of outliers, with three cases below the lower boxplot whisker and thus less than 1.5 times the interquartile range. In examining the data for multivariate outliers, Mahalanobis Distance was used with the three independent variables. Given that there were three predictor variables, the χ^2 critical value for $df = 3$ and $\alpha = .001$ was 16.27. The maximum for the Mahalanobis Distance in the dataset was calculated to be 13.837. *P*-values were also computed for each case based on the Mahalanobis distance and the χ^2 distribution. The probabilities were then examined to see if any fell below .001, with none falling below. As such, there did not appear to be evidence of any multivariate outliers in the data.

The data were examined for multicollinearity among the independent variables. In looking at the Pearson correlations between the variables, the correlation between brooding rumination and academic perseverance was $r = -.223$, between reflection rumination and academic perseverance was $r = -.102$, and between brooding rumination

and reflection rumination was $r = .708$. The highest of these correlations, i.e., between brooding rumination and reflection rumination, was understandable given that these were both aspects of rumination, yet this correlation still did not appear too high as to cause issues for the analysis. The data were also examined for multicollinearity using the collinearity statistics. The tolerance scores were all above .2, ranging from .476 to .944. The VIF scores were all below 10, ranging from 1.095 to 2.103. As such, neither the correlations nor the collinearity statistics showed evidence of multicollinearity among the independent variables.

The assumptions of normality, linearity, and homoscedasticity of residuals were examined using a scatterplot of the standardized predicted values and the standardized residuals as well as a P-P plot for the regression model. To check the assumption of homoscedasticity, the scatterplot was examined. The scatterplot showed an approximately random distribution, thus meeting the assumption of homoscedasticity. The random distribution in the scatterplot also demonstrated evidence of normality and linearity in the residuals. To further check the assumption of normality of the residuals, the P-P plot was examined. The P-P plot showed some evidence that the residuals did not follow a normal distribution, although there did not appear to be significant deviations from normality.

For the statistical assumptions for the analysis for Aim 2, many of the assumptions were met. However, issues with the distributions of the primary variables of interest, issues with linearity in the associations between the independent variables and dependent variable, issues with normality of the residuals, and also potential outliers for the outcome variable were detected. The impact of removing the outliers for cumulative

GPA was examined to see how this might influence the potential violation of statistical assumptions. After removing the three outliers, another analysis was conducted to check again for issues with normality, linearity, multivariate outliers, and multicollinearity. The outcome variable appeared to show some increased normality in its distribution, with the normality test producing a non-significant Shapiro-Wilk statistic ($p = .072$), providing further evidence of normality. The issue with linearity remained, yet there were no issues with multivariate outliers or multicollinearity. Lastly, the residuals were examined again. The residual scatterplot showed continued evidence of normality, linearity, and homoscedasticity, while the P-P plot appeared to display increased evidence of normality relative to the original P-P plot. Although this re-analysis suggested removal of the outliers would increase the degree to which the model fit the statistical assumptions, the changes did not appear to be a marked improvement. There still appeared to be enough evidence of violations of the statistical assumptions such that the proposed multiple linear regression would not be warranted. As such, in light of the violation of statistical assumptions, particularly the non-normal distributions in the variables, as well as the lack of significant associations and linear relationships between the predictor variables (i.e., academic perseverance, brooding rumination, and reflection rumination) and the outcome variable (i.e., last semester cumulative GPA) the analysis for Aim 2 was not conducted.

Primary Analysis Results

A Fisher-Freeman-Halton Exact Test was conducted to examine the potential association between higher levels of coping flexibility and academic resilience. The analysis was conducted in order to test the hypothesis that groups with greater coping flexibility would be more likely to be in the group demonstrating academically resilient

outcomes. The calculated test statistic for a two-sided test of significant using the Fisher-Freeman-Halton Exact Test was 6.975, which was not statistically significant ($p = .123$). The results from the Fisher-Freeman-Halton Exact Test suggest that there is no evidence in the sample of a relationship between coping flexibility and academic resilience. Please see Table 9 for frequencies of students in each category broken down by coping flexibility group and academic resilience group.

DISCUSSION

The present study was conducted in order to explore the potential association between coping flexibility and academic resilience among low-SES college students. Researchers have previously found strong evidence that coping flexibility helps individuals respond effectively to stressors and is associated with improved psychological adjustment (Cheng et al., 2014). Building on this research, the present study sought to examine whether a resilience-promoting factor identified in the context of stressors such as PTE exposure would also promote resilient academic outcomes. Specifically, the present study was based on the theory that coping flexibility might act as a resilience-promoting factor for college students who had come from a background of poverty and potentially facilitate improved academic performance for these students, thus countering the well-known negative consequences of economic adversity on academic outcomes. The two primary aims for the study were: 1) to explore the association between coping flexibility and academic resilience in a sample of low-SES college students using empirically-determined groups based on proxy measures of coping flexibility and cumulative GPA across semesters; and 2) to further explore associations among the variables of interest to see if each of the theorized aspects of coping flexibility were significant predictors of academic performance. The study used secondary data analyses to examine potential associations and was exploratory in nature. Based on previous research on coping flexibility, psychological adjustment, academic performance, and academic resilience, it was hypothesized that those individuals who showed higher

coping flexibility would be more likely to show academically resilient outcomes and that all of the facets of coping flexibility would be significant predictors of academic performance in the sample.

The results from the analyses did not support the hypotheses for the study. Using the empirically-determined groups based on coping flexibility and academic resilience as categorical variables, a Fisher-Freeman-Halton Exact Test was conducted to examine the potential association between coping flexibility and academic resilience. The results from the test were not statistically significant and thus failed to provide support for the hypothesis for Aim 1. More specifically, the coping flexibility group an individual was categorized into was not found to be associated with any increased or decreased likelihood that an individual was in the academic resilience group. Although the analysis for Aim 2 was not conducted due to violations of the required statistical assumptions, findings during the preliminary analytical procedures were consistent with the findings from the analysis for the first study aim. Particularly, it was discovered during the preliminary analytical procedures for Aim 2 that there were no significant linear associations between the three proxies of coping flexibility facets as defined in the study (i.e., academic perseverance, brooding rumination, and reflection rumination) and the outcome variable. Because of this, along with other potential violations of the statistical assumptions for the analysis for Aim 2, the proposed multiple linear regression was not conducted. Taken together, the findings appear to suggest that coping flexibility as measured for this study is not associated with academic performance or academic resilience in the sample of low-SES college students. However, some study limitations,

which will be further discussed below, likely influenced the results, thereby warranting caution in a strong interpretation of the findings.

Although the study did not reveal support for the hypothesized associations, there are a number of points of interest worth discussing. The study was able to explore a unique sample and rich, longitudinal dataset that provided an opportunity to look closely at potential predictors of academic performance among college students who came from a background of poverty. A related strength of the study is the temporal design and order of measurement. Poverty as the chronic stressor was assessed prior to the study via the students' participation in an educational grant program; the baseline questionnaire and academic survey that contained the measures of academic perseverance and rumination were administered at the beginning of the students' first year of college; and the outcome variable—in this case cumulative GPA—was measured after the stressor and potential predictor variables. Thus the study used a sound temporal design for assessing resilience and avoided one of the potential weaknesses of resilience research whereby predictors, stressors, and outcomes are measured simultaneously and therefore confounded with each other.

Furthermore, studies such as the present one are important considering the persistence of poverty in the United States and the associated deleterious consequences of such significant economic adversity. The academic achievement gap between low-SES and high-SES is a particularly notable consequence highlighted by many researchers (Adams et al., 2016; Jury et al., 2017; Olszewski-Kubilius & Corwith, 2018). A number of factors associated with poverty have been found to contribute to reduced academic achievement in childhood as well as in early adulthood during college (Adams et al.,

2016; Jury et al., 2017; Olszewski-Kubilius & Corwith, 2018). For example, in a study investigating a college sample that was majority low-SES and first-generation students, there were significant associations among increased financial strain, increased perceived stress, and reduced academic and social integration (Adams et al., 2016).

All of the college students in the sample of the present study came from low-SES backgrounds of having an annual household income at or below 150% of the federal poverty line as indicated by their participation in the educational grant program. Notably, many (37%) reported the lowest bracket of less than \$9,999 when asked about family annual household income. Some students in the present study's sample obtained lower academic performance over the course of the four years of data collection, with some also dropping out of college during the study. Although participants were not asked directly about specific poverty-related stressors, it is reasonable to assume that many of the participants in the study experienced some of the environmental factors associated with poverty that have been found in the literature to contribute to impairments in academic performance (e.g., lower levels of resources invested in education, reduced opportunities for extracurricular activities, and reduced access to mentors and adult role models; Olszewski-Kubilius & Corwith, 2018). Such environmental factors may have, in turn, negatively influenced the academic outcomes for some of the participants.

Despite the potential evidence of the negative impacts of poverty on academic outcomes in the sample, there was also clear evidence of academic resilience. For the purpose of the present study, academic resilience was defined as the outcome where an individual shows high academic achievement despite coming from a background of poverty and dealing with stressors earlier in life that are associated with negative impacts

on academic performance. This definition of academic resilience echoes some of the original research on the concept of resilience in general, with resilience research initially more focused on positive adjustment later in life for individuals who had exposure to chronically adverse environments in childhood (Bonanno & Diminich, 2013). Following Bonanno and Diminich's (2013) framework for increasing clarity in resilience literature, academic resilience for the current study was conceptualized as a form of *emergent* resilience specific to academic contexts and outcomes that manifests later in life following early experiences with chronic adversity.

Beyond the broader conceptualization of academic resilience used in the present study, the particular operationalization of the construct used in the present study had precedent in previous research. For example, in a study of academic resilience among low-SES, racial/ethnic minority college students, Morales (2010) operationalized academic resilience using information on parental education and economic background to determine SES and aspects of academic performance to determine academic success, with those students who had at least 30 credits and had at least a 3.0 GPA being categorized as showing academic resilience. However, the present study differed from Morales' (2010) study in that a group of low-SES students showing evidence of academic resilience was compared with a group of low-SES students who did not show as resilient of academic outcomes.

The differences between these two approaches mirrors a distinction described by Rudd et al. (2021) in their systematic review of the academic resilience literature. They identified three primary approaches to measuring and studying academic resilience in the literature, including a definition-driven approach, a process-driven approach, and a latent

construct approach. The study by Morales (2010) appeared to have followed the process-driven approach, as it was focused on the dynamic interaction among resilience-promoting factors. The present study, rather, followed the definition-driven approach, as it included information on adversity and academic performance data to define a group showing academically resilient outcomes, which was then compared to a group that did not demonstrate academically resilient outcomes, in an effort to identify factors that promoted academic resilience. Rudd et al. (2021) point out that one of the strengths of the definition-driven approach is that it allows researchers flexibility in determining context-specific conceptualizations of resilience. Thus, the present study provided an example of the strengths of this definition-driven approach. The unique low-SES college student sample and the longitudinal dataset allowed for the development of a contextually-relevant definition of academic resilience by which possible resilience-promoting factors could be identified.

Relatedly, another strength of the study was that it broadens the understanding of the range of possible academic outcomes following chronic adversity such as poverty. As has been previously discussed, a large body of research attests to the negative consequences of poverty. This mirrors much of the research on outcomes following PTE exposure, as highlighted by Bonanno and Diminich (2013) and Bonanno, Westphal, and Mancini (2011). These researchers point out that much of the literature on outcomes following PTE exposure has focused on categorically-defined mental disorders, such as PTSD and MDD. However, the researchers go on to note that such an emphasis is limited as it does not allow for a full examination of the broad range of outcomes following PTE exposure (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011). Both of

these observations resonate with those offered by Ellis et al. (2017), who point to a common deficit model of resilience and suggest the benefits of exploring stress-adaptive skills.

Similarly, it is clear from the present study that some individuals can attain positive outcomes despite coming from a background of poverty, with approximately 39% of the present study's sample ($n = 21$) having maintained a cumulative GPA of 3.0 or greater for every semester over the course of four years. The percentage of low-SES college students that attained academically resilient outcomes in this sample is particularly notable when comparing these findings to the available data on academic outcomes for low-SES college students at the national level. Although there are no national data on the number of low-SES students who maintain a GPA of 3.0 or above, research conducted on educational attainment and SES has found that 14% of American college students from low-SES backgrounds attained a bachelor's degree or higher (National Center for Education Statistics, 2015). It is unclear from the present study how many of the low-SES students in this sample went on to graduate, yet it is likely that many if not most of the students with academically resilient outcomes were able to graduate. It is also likely that a number of the students in the group not showing academically resilient outcomes also went on to graduate. Thus, the percentage of students in this sample who will likely attain a bachelor's degree appears to be significantly higher than the percentage found at the national level among American college students from low-SES backgrounds. The high rate of academic success in the sample for the present study is also notable given that the many students continued to show high academic performance even during the COVID-19 pandemic. It is possible

that a significant contributing factor to the relatively higher success rate in the present sample was the availability of resources associated with the students' participation in the educational grant program. This grant program covered the full cost of tuition for the students, as well as room, board, and books, and therefore removed a significant financial burden from these students. Nonetheless, the findings from this unique sample provide a broader perspective on academic outcomes among college students who experience poverty.

As was noted above, one significant stressor that occurred over the course of the study that affected the students in the sample was the COVID-19 pandemic. The COVID-19 pandemic has been a devastating and profoundly disruptive event for individuals and communities around the world. In addition to the tragic health consequences of illness and loss of life associated with the pandemic, and the societal and economic consequences of the pandemic, stay-at-home orders, and lockdowns, the COVID-19 pandemic also highlighted and exacerbated many disparities within the U.S. and around the world. Researchers have pointed to a number of factors associated with poverty, such as crowded living conditions, reduced access to outdoor spaces, limited opportunities for remote work, heightened economic uncertainty, and financial barriers to accessing healthcare, that place low-SES individuals at increased risk of exposure to COVID-19 and poorer health outcomes (Patel et al., 2020). Similarly, researchers have found evidence that within the U.S., racial/ethnic minority individuals and individuals from low-SES households with incomes below \$25,000 had a greater likelihood of having risk factors associated with more severe illness from COVID-19 (Raifman & Raifman, 2020). Individuals from such backgrounds also continued to face structural inequities during the

pandemic that likely further compounded both health and economic disparities (Patel et al., 2020; Raifman & Raifman, 2020).

The COVID-19 pandemic also caused many students to experience interruptions in their education (Aucejo et al., 2020; Marler et al., 2021; Tasso et al., 2021; Usher et al., 2021). Schools experienced closures for varying periods of time, with many college students having to leave campuses to follow the stay-at-home orders. The realm of remote learning quickly expanded to encompass a significant share of students' educational experience so as to align with social distancing guidelines implemented to reduce the spread of disease. Emerging evidence has shown that during the pandemic, college students experienced significant fears related to contracting the COVID-19 virus; increased overall stress; increased loneliness; reduced sense of academic belonging; reduced academic motivation; increased difficulties focusing; frustrations with remote academic work; and decreased learning due to combined difficulties with self-regulation and poor instructional quality (Marler et al., 2021; Tasso et al., 2021; Usher et al., 2021). Researchers also found evidence of potential compounding effects of the pandemic for low-SES college students in particular, with one study showing evidence of an association between lower SES and increased COVID-19-related distress in college students (Marler et al., 2021). Relatedly, another study showed evidence that low-SES college students were more likely than high-SES college students to have a family member experience an income loss during the pandemic, more likely to delay their graduation, and more likely to expect greater decreases in their GPA due to the pandemic (Aucejo et al., 2020). Low-SES college students thus appear to be at greater risk of both increased distress and potential academic impairment due to the COVID-19 pandemic.

The full impact of the COVID-19 pandemic on academic performance for low-SES college students is beyond the scope of the present study. However, a number of points are worthy of consideration in the context of the present study. The COVID-19 pandemic began during the last semester for which data were collected for the study. There were a number of students who had previously been enrolled in courses for each semester but who did not have grades for the spring 2020 semester. Thus, in line with the previously discussed studies on low-SES college students, it is likely that the pandemic negatively impacted the capacity for some students in the sample to continue pursuing their academic goals. However, it appeared that the majority of the students in the sample chose to complete their courses, with many students showing resilient academic outcomes. With regard to these latter students, not only were they able to attain high academic achievement during college despite coming from a background of poverty, they were also able to complete another semester and maintain their high level of achievement during the pandemic. This would appear to provide further evidence of the robustness of the definition of academic resilience in the sample.

Beyond highlighting clear evidence of academic resilience in the sample, a primary aim of the study was to investigate the resilience-promoting factor of coping flexibility and to see how it possibly related to academic resilience. Coping flexibility has been broadly defined as the capacity to use different coping strategies for different stressful situations. In the present study, coping flexibility was operationalized using proxy measures of emotion-focused coping and problem-focused coping, including a measure of rumination and a measure of academic perseverance, respectively. Consistent with research conducted by Cheng (2001), the scores for the proxy measures of coping

behavior were used to distinguish different groups in the sample based on their patterns of coping behavior. In examining the results from the hierarchical cluster analysis, five groups were identified that appeared to represent meaningful patterns of coping behavior, with each group varying in the degree to which they showed evidence of coping flexibility. Among the five groups, a high coping flexibility group was identified that showed high rumination and high academic perseverance, which allowed for an examination of the potential association between coping flexibility and academic resilience. As has been mentioned, the results from the study did not reveal evidence of an association between coping flexibility and academic resilience in the sample of low-SES college students.

Coping flexibility has been found to be a predictor of psychological adjustment in the face of different stressors (Cheng et al., 2014). For college students specifically, coping flexibility has been examined in relation with the stressful transition during the first year of college (Cheng, 2001), academic stress (Freire et al., 2018; Gan et al., 2007), and PTE exposure (Bonanno, Pat-Horenczyk, & Noll, 2011; Galatzer-Levy et al., 2012; Shigemoto & Robitschek, 2021). Kitano and Lewis (2005) have suggested that flexibility in coping behavior can serve as a protective factor for at-risk youth coming from backgrounds of family stress and poverty. Building on this previous research, the present study sought to explore how coping flexibility might serve as a protective factor in early adulthood for individuals who have experienced the chronic stress of coming from a background of poverty. In the available research on college students, coping flexibility was found to be associated with positive psychological outcomes, and was also associated in one study with reduced college burnout, a positive outcome specific to

academic contexts (Gan et al., 2007). Prior to the present study, the association between coping flexibility and academic performance in college had not been examined.

Furthermore, the association between coping flexibility and academic resilience among low-SES college students had not been examined prior to the present study.

In the context of examining the relationship between coping flexibility and academic resilience, there are challenges in interpreting any findings. Although the longitudinal design and the temporal order of measuring the variables of interest were strengths of the present study, the study design leaves open questions about how poverty experienced earlier in life might relate with coping flexibility. There are developmental aspects to coping behaviors and coping flexibility that are important to consider. Indeed, Kitano and Lewis (2005) have highlighted how coping abilities change and mature across childhood and adolescence, noting that as individuals grow up, their capacity for appraisal and consideration of coping behaviors increases. Relatedly, research has shown that older adolescents have a wider range of coping behaviors and use more cognitive approaches than younger adolescents (Kitano & Lewis, 2005). Moreover, it is important to consider more fully how poverty might interact with the development of coping flexibility.

As Cheng et al. (2014) and Bonanno and Burton (2013) have highlighted, the cognitive capacities to notice different aspects of stressful situations and to consider different courses of action are prerequisites to coping flexibility. For Cheng et al. (2014), individuals in the planning stage of coping flexibility must appraise both the controllability of a situation and their options for acting, which Bonanno and Burton (2013) refer to as context sensitivity. Bonanno and Burton (2013) point out that there are

individual differences in these capacities for appraisal that are likely associated with coping flexibility. From a developmental standpoint, such individual differences in childhood would likely be associated with coping flexibility later in life. Along these lines Kitano and Lewis (2005) have highlighted findings revealing that young children have been found to display characteristics related to coping that can promote resilient outcomes, such as adaptability, easy temperaments, good interpersonal skills, a sense of autonomy, and a capacity to ask for help when needed. Moreover, coping flexibility may only become salient and have a greater impact on outcomes once an individual learns different coping behaviors that could be used, and thus develops their repertoire (Bonanno & Burton, 2013) of coping behaviors. Research shows that individuals differ in their tendencies towards using different coping behaviors, and they would also likely differ in their exposure to different coping strategies through observing others, such as parents, caregivers, family members, and friends.

Lastly, for coping behaviors and, in turn, coping flexibility to be effective, an individual would need the following factors: 1) to have the capacity to benefit from coping behaviors used, particularly for behaviors directed towards changing themselves; and 2) to be in an environment that is responsive to their coping efforts, particularly for behaviors directed towards changing the situation. These aspects of coping flexibility are highlighted as key to the feedback stage (Bonanno & Burton, 2013; Cheng et al., 2014). As such, it may be the case that some individuals are predisposed at an early age towards showing greater coping flexibility later in life due to a combination of personality and environmental factors. Importantly, as some researchers have pointed out (e.g., Kitano &

Lewis, 2005), the likelihood of such developmental trajectories would be expected to dynamically interact with the conditions of poverty experienced earlier in life.

There are a number of ways in which poverty may interact with these developmental aspects of coping flexibility. To begin, poverty could influence the development of context sensitivity in different ways. For example, if an individual grows up hearing frequent discussion of economic concerns and limited resources, this could influence their sense of controllability in stressful situations. Due to economic challenges, a child might develop a sense that many things are beyond one's control and be less sensitive to situations where one does have more agency. Alternately, a child growing up in an environment where income fluctuated may become more aware of when there are available resources that could be used in coping efforts and thus potentially more sensitized to relevant contextual factors.

Poverty could also have an impact on the development of an individual's repertoire of coping behaviors. For example, due to poverty, individuals might have limited opportunities to engage in particular coping behaviors that they would like to use in response to stressful situations, thus becoming less likely over time to attempt such coping strategies. Along these lines, an individual's repertoire of coping behaviors would be influenced by their or their family's financial capacity to support different coping strategies, with poverty having a negative impact on the development of an individual's coping repertoire.

At the same time, through limiting some options for coping strategies, economic constraints might motivate a broader search for alternative ways to cope with stressors. In this way, the chronic stress of poverty might lead an individual to broaden their repertoire

of coping behaviors. This suggestion echoes points made by several authors, including Ellis et al. (2017) on the development of stress-adaptive skills, and Morales (2010) on adverse experiences potentially leading to increased protective factors. Kitano and Lewis (2005) have argued similar points, noting both that poverty serves as a significant risk factor *and* that past experiences with a wider range of stressors can lead to a greater variety of coping strategies, thereby contributing to increased likelihood of resilient outcomes. Importantly, it should be noted that the suggested ways in which poverty might influence coping flexibility need not be mutually exclusive, and it is likely that poverty would show a complex relationship with the development of coping flexibility. Although the present study did not provide opportunities to explore these possibilities further, it is likely that the coping strategies of the students in the sample developed through a complex interaction between personality and environmental factors.

Another strength of the present study was the identification of different coping flexibility groups using available measures in the longitudinal dataset. This was a novel way to examine coping flexibility as a predictor of academic resilience in a dataset that might otherwise not afford the possibility of looking at the construct. Cheng et al. (2014) outlined several ways that coping flexibility has been conceptualized and studied, including broad repertoire, balanced profile, cross-situational variability, strategy-situation fit, and perceived ability. In the present study, the way that coping flexibility was defined was similar to both balanced profile and perceived ability. According to Cheng et al. (2014), these two ways of conceptualizing coping flexibility showed small but significant effect sizes in their associations with psychological adjustment (balanced

profile $r = .19$; perceived ability $r = .32$). As such, they appeared to be reasonable ways that coping flexibility could be conceptualized and assessed.

Considering previous research on coping flexibility, it is surprising that the results from the present study did not show evidence that coping flexibility was associated with academic resilience. This lack of association was shown through both the Fisher-Freeman-Halton Exact Test of the association between the two group categorizations, and also through the bivariate correlations that failed to show significant positive associations between the facets of coping flexibility and last semester cumulative GPA. The findings are also surprising in light of the research showing a positive association between perseverance and academic performance. Similarly, it is also surprising that the facets of rumination showed no positive associations given some evidence that particular forms of rumination have been found to have adaptive qualities (e.g., goal-directed rumination for academic performance; reflection rumination for depression).

Interestingly, although the findings were not statistically significant, there appeared to be potential evidence of a negative association between coping flexibility and academic resilience in this sample of low-SES college students. For example, the group defined as showing high coping flexibility had the lowest cumulative GPA as compared with all of the other groups and was the only group that did not show any representation in the group demonstrating academically resilient outcomes. Additionally, in the present study, there appeared to be some evidence that individuals showing higher academic perseverance and lower rumination were more likely to have academically resilient outcomes, although the association between academic perseverance and last semester cumulative GPA was statistically non-significant and negative in the full sample.

Although theory and previous research would suggest a positive association between coping flexibility and academic outcomes, particularly for low-SES students, the findings from the present study suggest that there is no strong relationship between these variables. As such, it is important to consider why coping flexibility may not be a predictor of academic outcomes, while also being a predictor of psychological adjustment.

As has been discussed, rumination has been found to be related to increased depression (Treyner et al., 2003) and impairment in academic functioning (Lyubomirsky et al., 2003). However, there has been some evidence that particular types of rumination (e.g., reflection rumination and goal-directed rumination) can have adaptive qualities, particularly when an individual is not as distressed (Krys et al., 2020; Treyner et al., 2003). Across the coping flexibility groups from the present study, the association between overall rumination and academic performance was not clear. The high coping flexibility group and the moderate coping flexibility/high problem-focused coping group, both of which showed higher levels of overall rumination, had the two lowest cumulative GPAs across the groups. However, another group that showed relatively high levels of overall rumination, the moderate coping flexibility/high emotion-focused coping group, had the second highest cumulative GPA across the groups. Another interesting finding was revealed when examining rumination at the subscale level, with all groups showing slightly higher levels of brooding rumination than reflection rumination. Overall, although the differences between the groups were not statistically significant in the present study, the findings appear to mirror the mixed results from other research on the association between rumination and academic performance.

Further, the findings with regard to academic perseverance were even more surprising. Connections between perseverance, whether by itself or as a facet of grit, and academic outcomes have been consistently found by a number of researchers (Cassidy, 2016; Credé et al., 2017; Duckworth et al., 2007; Farruggia et al., 2018; Morales, 2010; Thorsen et al., 2021), so it was striking that academic perseverance was not a significant predictor of cumulative GPA in the sample. There was some evidence at the group level of both positive and negative associations between academic perseverance and GPA, mirroring the mixed findings on rumination. For example, among the three groups with the highest academic perseverance, two of the groups showed the lowest GPAs across groups while the other group showed the highest GPA. Again, the findings on group differences were not statistically significant, yet the patterns are of interest given their deviation from findings from previous research in this area.

Overall, the findings from the present study suggest that coping flexibility as measured in the study does not appear to be a significant predictor of academic performance and academic resilience for low-SES college students. Yet, again the findings and any conclusions drawn must be considered in light of some study limitations that will be further discussed below. The results do appear to support the notion of the fallacy of uniform efficacy discussed by Bonanno and Burton (2013). The facets of coping flexibility examined in the present study, despite there being some precedent to expect them to be associated with academic performance, did not appear to be significant contributors to academic outcomes. The findings did not provide evidence of uniform efficacy for either academic perseverance or rumination as proxies for problem-focused

coping and emotion-focused coping. Further, the findings did not provide evidence supporting the efficacy of coping flexibility for promoting academic outcomes.

In considering possible explanations for the study findings, it may be the case that academic performance is a type of outcome for which flexibility is less conducive. Indeed, along similar lines Bonanno and Burton (2013) have suggested that there could be a threshold for coping flexibility beyond which behaviors appear inconsistent and maladaptive, and that there could be resource costs or costs in other domains associated with coping flexibility. Relative to other types of outcomes that have been studied in relation to coping flexibility (e.g., psychological adjustment), academic performance appears to be less subjective and less open to interpretation. The behaviors that are required in order to result in good academic performance appear to be more straightforward (e.g., listening and being engaged in classes, completing homework, and studying and doing well on exams) than the behaviors associated with positive outcomes in other contexts. Significant variability in such behaviors could lead to inconsistent academic performance at best and poor academic performance at worst. As such, it may be the case that flexible use of coping strategies could contribute to well-being and reduced distress for students while in college, as has been demonstrated in previous research (e.g., Freire et al., 2018; Galatzer-Levy et al., 2012; Gan et al., 2007; Shigemoto & Robitschek, 2021), whereas *less* flexibility in academic behaviors such as self-discipline and routine studying would be more likely to contribute to positive academic outcomes.

Although the present study was largely focused on direct effects of coping flexibility on academic resilience and academic performance, it is also possible that

coping flexibility has significant indirect effects on academic outcomes. For example, coping flexibility could moderate the relationship between poverty and academic performance, wherein the relationship between economic stress and academic performance would be weaker among individuals with higher coping flexibility versus those with lower coping flexibility. In this way, coping flexibility might be helpful for students who are experiencing stress to be better able to manage that stress and focus on academic demands. Relatedly, Cheng et al. (2014) theorized that SES might serve as a moderator in the relationship between coping flexibility and psychological adjustment, with the relationship hypothesized to be stronger for low-SES individuals versus high-SES individuals, yet the authors did not find evidence supporting this hypothesis. Overall, the findings of the present study highlight a need to broaden the notion of the fallacy of uniform efficacy so as to become more flexible in our understanding of the potential benefits and possible limitations of coping flexibility as a resilience-promoting factor, particularly with regard to academic outcomes for low-SES college students.

Limitations and Future Directions

Although the present study demonstrated a number of strengths, there were also limitations of the study, which, in turn, point to opportunities for future research. One limitation of the present study was the small sample size and related power of the analyses. As was mentioned in the preliminary analytical procedures, the sample size of 54 was much lower than the recommended sample size of 207 based on the power analysis. Although it was possible to use a statistical test better suited for small samples (i.e., the Fisher-Freeman-Halton Exact Test) for the analysis for Aim 1, it is still likely that for the study overall the analyses were underpowered. It is thus possible that there

were differences across groups in the primary variables of interest for which the sample size was too small for analyses to detect. Another limitation related to the particular sample used in this study was the fact that all of the students in the sample received full financial support for their undergraduate education as part of their participation in the educational grant program. The level of financial support provided to the students makes this a unique sample of low-SES college students that may differ from other samples of low-SES college students. Given these limitations, future studies would benefit from using larger sample sizes of low-SES college students that would increase the possibility of finding evidence of an association between coping flexibility and academic resilience. Furthermore, the use of larger samples containing low-SES college students with varied levels of financial support would increase the generalizability of any findings on an association between coping flexibility and academic resilience.

Another limitation of the present study was in the use of self-report measures. Although self-report measures provide accessible ways to assess constructs of interest, they nonetheless possess limitations. The measure used to assess academic perseverance provided a window into problem-focused coping and academic behaviors. However, given that it was a self-report measure, it must be viewed as a measure of *perceived* academic perseverance. Indeed, the measure asks how certain respondents feel that they would be able to respond and cope effectively with academic challenges and continue to pursue their academic goals. Similarly, the measure of rumination used in the study asks individuals to describe how frequently they engage in different behaviors such as brooding or reflection, yet as a self-report measure is only able to assess the individual's *perceptions* of the frequency of their behavior. As Bonanno, Pat-Horenczyk, and Noll

(2011) point out, it is unclear how self-report measures of perceptions of coping behavior and coping flexibility relate to other measures that may more directly capture the coping behaviors being used. Given this, future research on coping flexibility and academic resilience would benefit from gathering data from a variety of sources (e.g., daily diary measures) so as to better capture the constructs of interest.

A related limitation associated with self-report measures is the potential for response bias. Response bias is a potential issue with any self-report measures, but can be particularly evident in measures of positive, societally-valued characteristics. As has been mentioned, the distribution of the scores on the academic perseverance measure may have shown some evidence of response bias. When responding to the questions about academic perseverance, participants in the present study may have felt motivated to present themselves as more certain that they would engage in positive behaviors to address challenges and maintain focus on school. Given the potential response bias issue, future research on coping flexibility and academic resilience would benefit from including a measure that assessed this potential response bias, such as those included in some other studies of coping flexibility [e.g., the Marlowe-Crowne Social Desirability Scale as used by both Cheng (2001) and Bonanno, Pat-Horenczyk, and Noll (2011)].

Another potential limitation of the study was the higher order operationalization and measurement of coping flexibility. Although the study demonstrated a novel way that coping flexibility could be measured in an already existing dataset, it is possible that the particular proxy measures used and the broader conceptualization of coping flexibility did not accurately capture or tap into the construct of interest. Some researchers have pointed out that studies on coping flexibility that use inventories of coping behaviors and

coping styles are limited by the styles that are included (Bonanno & Burton, 2013). This was an issue with the present study as it was limited by the available measures in the dataset that could be used as proxies for coping behaviors. As such, future studies on coping flexibility and academic resilience among low-SES college students could thus benefit from including measures that assess a broader range of coping behaviors and coping styles. Further, the inclusion of daily diary measures that assessed such behaviors may be more likely to capture the specific behaviors that could be used to identify flexible patterns of coping behavior.

The measure of rumination was used as a proxy measure of emotion-focused coping behavior based on the idea that rumination is a form of passive emotion-focused coping. Also, the research on rumination shows mixed findings in its associations with different outcomes such as psychological distress and academic performance, similar to research on emotion-focused coping. Although the measure of rumination was chosen as a proxy measure in light of these considerations, the specific measure used to assess rumination, the Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003), is more a measure of depressive rumination. It may be the case that rumination outside of the context of depression is adaptive, as some researchers have theorized and found evidence to support (e.g., goal-directed rumination; Krys et al., 2020). Given these considerations, it may have been more appropriate to have a measure that tapped into behaviors that were directed towards managing emotional distress in the context of academic stressors (e.g., taking a break when feeling stressed by a long period of studying for an exam, deciding to do something for one's well-being when one also has schoolwork to do, or talking about stress from school with a friend or family

member). Future research would benefit from including measures of depressive rumination as well as other forms of rumination (e.g., goal-directed rumination). Future studies would also be strengthened by controlling for psychological distress to see if rumination is more likely to show adaptive qualities when distress is accounted for.

Future studies would also benefit from inclusion of other variables that have been found to be predictive of academic performance so as to control for these variables. This has been a common practice in research on non-cognitive predictors of academic outcomes (Credé et al., 2017; Duckworth et al., 2007; Farruggia et al., 2018; Perera et al., 2015; Thorsen et al., 2021). One such predictor variable that has shown consistent associations with positive academic outcomes is intelligence. Intelligence has also been identified as a more general resilience-promoting factor (Kitano & Lewis, 2005). Given this, it would be helpful to include such variables in future research on academic resilience among low-SES college students, particularly since the present study's analyses did not reveal evidence of coping flexibility being a significant predictor of resilient academic outcomes.

Although the study was able to distinguish some variability in the trajectories of academic outcomes for low-SES students through comparing resilient outcomes with non-resilient outcomes, there was likely further variability that could have been explored. This echoes points made by Rudd et al. (2021) about potential weaknesses of the definition-driven approach to measuring and studying academic resilience, whereby study designs with only two groups may obscure the full picture of academic success for students who have experienced chronic adversity. This also echoes Bonanno and

Diminich (2013) and Bonanno, Westphal, and Mancini (2011) in their research on trajectories following PTE exposure that shows a broad range of outcomes.

Specifically, in the present study, there were a few students in the sample who showed cumulative GPAs above 3.0 for the majority of the semesters but who also had a drop in GPA below 3.0 for a few semesters. Some other students showed evidence of fairly consistent lower academic performance at the beginning of college but then showed improved GPA over the course of the study. In the present study, both of these groups of students were categorized in the group that did not demonstrate academically resilient outcomes, yet it is possible that these highlight other prototypical trajectories for academic outcomes that would be important to distinguish. Again, following work on outcome trajectories following PTE exposure (Bonanno & Diminich, 2013; Bonanno, Westphal, & Mancini, 2011), the former group of students could be demonstrating outcomes that could be described as academic recovery, while the outcome trajectory for the latter group could be described as gradual academic success. In identifying other trajectories of academic outcomes, there would also be more opportunities for exploring predictors of the outcomes. For example, one could explore factors that might lead some students who started off college with lower GPAs to show consistent academic impairment and other students to show gradual academic success despite lower initial performance. Future studies would benefit from taking into account such considerations. Furthermore, research on the full range of academic outcome trajectories would provide more opportunities for intervention to increase the likelihood that each student would be able to meet their full academic potential.

CONCLUSION

The present study was undertaken in order to explore the potential association between coping flexibility and resilient academic outcomes among low-SES college students. Coping flexibility has been found to be a predictor of psychological adjustment and it was theorized that the resilience-promoting aspects of coping flexibility might promote academic achievement for college students who have experienced the stressor of coming from a background of poverty. In contrast to previous research, coping flexibility as measured in the present study was not found to be a significant predictor of academic resilience for low-SES college students. Although the findings from the present study suggest that other variables may be more important than coping flexibility for promoting academic resilience for low-SES students, future research would still benefit from examining coping flexibility given the previous research showing resilience-promoting properties in other domains. Such research may help to identify the particular domains where coping flexibility may be an important predictor of positive outcomes. Overall, research on factors that promote resilient academic outcomes for students coming from a background of poverty can help identify the most important sites of intervention so that low-SES college students can attain their full academic potential.

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APPENDICES

Table 1
Sample Characteristics for Full Sample (N = 54)

	Frequency	%	
<u>Gender/Sex</u>			
Male	19	35.2	
Female	33	61.1	
Genderfluid	2	3.7	
 <u>Race/Ethnicity</u>			
White/European	31	57.4	
African American/Black	7	13.0	
Hispanic/Latino/a	3	5.6	
Asian/Pacific Islander	5	9.3	
Multiracial	8	14.8	
 <u>Annual Household Income for Family Household</u>			
Less than \$9, 999	20	37.0	
\$10,000-\$19, 999	15	27.8	
\$20,000-\$39, 999	14	25.9	
\$40,000-\$59, 999	1	1.9	
 <u>Highest Level of Education Achieved by Parents/Primary Caregivers</u>			
Did not finish high school	7	13.0	
High school diploma/GED	22	40.7	
Some college but no degree	10	18.5	
Associate's degree	7	13.0	
Bachelor's degree	6	11.1	
Master's degree	1	1.9	
Doctoral/Professional degree	1	1.9	
<hr/>			
	<i>M</i>	<i>SD</i>	Range
<u>Age at Baseline</u>	18.06	.30	18-20
<u>High school GPA</u>	3.63	.37	2.90-4.00
<u>ACT score</u>	25.89	3.59	20-33

Note: N = 54 for all variables except Annual Household Income (n = 50) and ACT (n = 53). High school GPAs were corrected so that none were above 4.0.

Table 2

Group Classification Means and Standard Deviations for Grouping Variables

	2 Groups	3 Groups	4 Groups	5 Groups
<u>Group 1</u>				
Academic Perseverance	5.06(.64)	4.11(.36)	4.11(.36)	4.11(.36)
Overall Rumination	1.49(.41)	1.36(.32)	1.36(.32)	1.36(.32)
<u>Group 2</u>				
Academic Perseverance	4.65(.51)	4.65(.51)	4.65(.51)	5.27(.45)
Overall Rumination	2.75(.56)	2.75(.56)	2.75(.56)	3.20(.39)
<u>Group 3</u>				
Academic Perseverance	-	5.37(.32)	5.31(.30)	5.31(.30)
Overall Rumination	-	1.53(.43)	1.26(.18)	1.26(.18)
<u>Group 4</u>				
Academic Perseverance	-	-	5.50(.35)	4.41(.29)
Overall Rumination	-	-	2.08(.21)	2.58(.53)
<u>Group 5</u>				
Academic Perseverance	-	-	-	5.50(.35)
Overall Rumination	-	-	-	2.08(.21)

Note: $N = 54$ for all variables. Values follow format $M(SD)$.

Table 3
Sample Characteristics for Coping Flexibility Groups

	High CF	Mod CF/ High PFC	Mod CF/ High EFC	High PFC	Mod PFC
<u>Total in group</u>	5	9	13	18	9
<u>Gender/Sex</u>					
Male	0	4	2	8	5
Female	4	5	11	9	4
Genderfluid	1	0	0	1	0
<u>Race/Ethnicity</u>					
White/European	5	4	3	12	7
African American/Black	0	3	1	3	0
Hispanic/Latino/a	0	0	2	1	0
Asian/Pacific Islander	0	0	3	1	1
Multiracial	0	2	4	1	1
<u>Annual Household Income for Family Household</u>					
Less than \$9, 999	3	3	6	6	2
\$10,000-\$19, 999	1	2	2	6	4
\$20,000-\$39, 999	0	4	3	6	1
\$40,000-\$59, 999	0	0	1	0	0
<u>Highest Level of Education Achieved by Parents/Primary Caregivers</u>					
Did not finish high school	0	3	2	1	1
High school diploma/GED	2	2	7	7	4
Some college but no degree	2	2	1	5	0
Associate's degree	0	2	1	3	1
Bachelor's degree	1	0	1	1	3
Master's degree	0	0	1	0	0
Doctoral/Professional degree	0	0	0	1	0
<u>Age at Baseline</u>	18.00(0)	18.00(0)	18.00(0)	18.17(.51)	18.00(0)
<u>High school GPA</u>	3.32(.50)	3.82(.22)	3.68(.27)	3.65(.40)	3.49(.41)
<u>ACT score</u>	27.20(3.49)	26.78(4.32)	25.25(3.57)	25.28(3.56)	26.33(3.32)

Note: CF = Coping Flexibility; PFC = Problem-focused coping; EFC = Emotion-focused coping. Categorical variables show frequencies; format for quantitative variables is $M(SD)$. $N = 54$ for all variables except Annual Household Income ($n = 50$) and ACT ($n = 53$). High school GPAs were corrected so that none were above 4.0.

Table 4
Sample Characteristics for Academic Resilience Groups

	Academically Resilient Outcomes	Non-Academically Resilient Outcomes
<u>Total in group</u>	21	33
<u>Gender/Sex</u>		
Male	6	13
Female	14	19
Genderfluid	1	1
<u>Race/Ethnicity</u>		
White/European	11	20
African American/Black	1	6
Hispanic/Latino/a	1	2
Asian/Pacific Islander	4	1
Multiracial	4	4
<u>Annual Household Income for Family Household</u>		
Less than \$9, 999	6	14
\$10,000-\$19, 999	8	7
\$20,000-\$39, 999	5	9
\$40,000-\$59, 999	0	1
<u>Highest Level of Education Achieved by Parents/Primary Caregivers</u>		
Did not finish high school	2	5
High school diploma/GED	10	12
Some college but no degree	1	9
Associate's degree	4	3
Bachelor's degree	2	4
Master's degree	1	0
Doctoral/Professional degree	1	0
<u>Age at Baseline</u>	18.05(.22)	18.06(.35)
<u>High school GPA</u>	3.70(.38)	3.58(.37)
<u>ACT score</u>	26.55(3.99)	25.48(3.33)

Note: Categorical variables show frequencies; format for quantitative variables is $M(SD)$. $N = 54$ for all variables except Annual Household Income ($n = 50$) and ACT ($n = 53$). High school GPAs were corrected so that none were above 4.0.

Table 5
Descriptive Statistics for Full Sample

	<i>M</i>	<i>SD</i>	Range
Academic Perseverance	4.92	.63	3.33-6.00
Overall Rumination	1.91	.76	1.10-3.90
Brooding Rumination	2.04	.80	1.00-4.00
Reflection Rumination	1.78	.83	1.00-4.00
Cumulative GPA	3.20	.50	1.86-3.99

Note: $N = 54$ for all variables except Cumulative GPA ($n = 41$).

Table 6
Descriptive Statistics for Coping Flexibility Groups

	<i>M</i>	<i>SD</i>	Range
<u>High CF (<i>n</i> = 5)</u>			
Academic Perseverance	5.27	.45	4.83-6.00
Overall Rumination	3.20	.39	3.00-3.90
Brooding Rumination	3.24	.52	2.40-3.80
Reflection Rumination	3.16	.68	2.60-4.00
Cumulative GPA (<i>n</i> = 2)	2.88	.43	2.57-3.19
<u>Moderate CF/High PFC (<i>n</i> = 9)</u>			
Academic Perseverance	5.50	.35	5.00-6.00
Overall Rumination	2.08	.21	1.80-2.40
Brooding Rumination	2.18	.29	1.60-2.60
Reflection Rumination	1.98	.42	1.40-2.60
Cumulative GPA (<i>n</i> = 7)	2.90	.67	1.86-3.78
<u>Moderate CF/High EFC (<i>n</i> = 13)</u>			
Academic Perseverance	4.41	.29	3.83-4.83
Overall Rumination	2.58	.53	1.70-3.60
Brooding Rumination	2.80	.64	2.00-4.00
Reflection Rumination	2.35	.78	1.00-3.60
Cumulative GPA (<i>n</i> = 10)	3.26	.40	2.38-3.62
<u>High PFC (<i>n</i> = 18)</u>			
Academic Perseverance	5.31	.30	4.83-6.00
Overall Rumination	1.26	.18	1.10-1.60
Brooding Rumination	1.40	.24	1.00-2.00
Reflection Rumination	1.12	.20	1.00-1.60
Cumulative GPA (<i>n</i> = 14)	3.34	.44	2.19-3.86
<u>Moderate PFC (<i>n</i> = 9)</u>			
Academic Perseverance	4.11	.36	3.33-4.50
Overall Rumination	1.36	.32	1.10-1.90
Brooding Rumination	1.42	.35	1.20-2.00
Reflection Rumination	1.29	.39	1.00-2.20
Cumulative GPA (<i>n</i> = 8)	3.22	.52	2.34-3.99

Note: CF = Coping Flexibility; PFC = Problem-focused coping; EFC = Emotion-focused coping. *N* = 54 for all variables except Cumulative GPA (*n* = 41) with number for each group indicated in Cumulative GPA cell.

Table 7
Descriptive Statistics for Academic Resilience Groups

	<i>M</i>	<i>SD</i>	Range
<u>Academically Resilient Outcomes (<i>n</i> = 21)</u>			
Academic Perseverance	4.82	.53	4.00-5.67
Overall Rumination	1.64	.69	1.10-3.60
Brooding Rumination	1.79	.77	1.20-4.00
Reflection Rumination	1.50	.65	1.00-3.20
Cumulative GPA (<i>n</i> = 21)	3.53	.24	3.09-3.99
<u>Non-Academically Resilient Outcomes (<i>n</i> = 33)</u>			
Academic Perseverance	4.98	.68	3.33-6.00
Overall Rumination	2.08	.76	1.10-3.90
Brooding Rumination	2.20	.80	1.00-4.00
Reflection Rumination	1.96	.89	1.00-4.00
Cumulative GPA (<i>n</i> = 20)	2.85	.46	1.86-3.58

Note: *N* = 54 for all variables except Cumulative GPA (*n* = 41) with number for each group indicated in Cumulative GPA cell.

Table 8

Pearson Correlations for Coping Flexibility Facets and Academic Performance

	1	2	3	4
1. Cumulative GPA	-			
2. Academic Perseverance	-.094	-		
3. Brooding Rumination	-.133	-.116	-	
4. Reflection Rumination	-.108	-.113	.716***	-

Note: * indicates $p < .05$, ** indicates $p < .01$, and *** indicated $p < .001$.

Table 9

Frequencies for Coping Flexibility Group x Academic Resilience Group

	Academically Resilient Outcomes (<i>n</i> = 21)	Non-Academically Resilient Outcomes (<i>n</i> = 33)
High CF (<i>n</i> = 5)	0	5
Moderate CF/High PFC (<i>n</i> = 9)	2	7
Moderate CF/High EFC (<i>n</i> = 13)	5	8
High PFC (<i>n</i> = 18)	8	10
Moderate PFC (<i>n</i> = 9)	6	3

Note: CF = Coping Flexibility; PFC = Problem-focused coping; EFC = Emotion-focused coping.

CURRICULUM VITAE

Benjamin J. Calebs

CONTACT INFORMATION

University of Louisville
Department of Psychological and Brain Sciences
Davidson Hall, Room 317B
Louisville, KY, 40292

Phone: (502) 297-4801
Email: benjamin.calebs@louisville.edu

EDUCATION

University of Louisville Doctor of Philosophy in Clinical Psychology Doctoral Dissertation (Defended): Coping Flexibility and Academic Resilience Among Low-SES College Students Dissertation Chair: Dr. Richard Lewine GPA: 3.977	2022 Louisville, KY
University of Louisville Masters of Science in Clinical Psychology GPA: 3.968	2019 Louisville, KY
University of Michigan Bachelor of Arts in Psychology GPA: 3.987	2016 Ann Arbor, MI
Asheville-Buncombe Technical Community College Associate of Science GPA: 4.0	2014 Asheville, NC

HONORS AND AWARDS

Award for Excellence in Clinical Work: Senior-Level, University of Louisville, June 2020

Award for Excellence in Professional Service, University of Louisville, June 2020

University Fellowship, University of Louisville, July 2016-July 2018

Graduate Network in Arts and Sciences Research Grant, University of Louisville, October 2017

James B. Angell Scholar, University of Michigan, March 2016

University Honors, University of Michigan, March 2016

LSA College Global Experience Scholarship, University of Michigan, May 2015

President's List, A-B Tech Community College, Spring 2013-Spring 2014

Phi Theta Kappa Honor Society, A-B Tech Community College, Spring 2013-Spring 2014

Academic Achievement in Psychology, A-B Tech Community College, Fall 2013

National Society of Leadership and Success, A-B Tech Community College, Fall 2013

CLINICAL EXPERIENCE

Clinical Interests: Culturally-Adapted Evidence-Based Treatment, Integrative Therapy, Cognitive-Behavioral Therapy, Mindfulness and Acceptance-Based Therapy, Multidisciplinary Integrated Treatment, Post-Traumatic Stress Disorder, Resilience, Mental Health Disparities

Clinical Psychology Doctoral Intern on the Asian Pacific Development Center Major Rotation (Telehealth and In-person) at Aurora Mental Health Center, Aurora, CO, August 2020-July 2021

- Conducted comprehensive intake assessments with adults from immigrant and refugee population using semi-structured interviews consistent with Medicaid requirements
- Conducted individual outpatient therapy with adult clients using techniques from evidenced-based treatments, including Integrative Therapy, Cognitive-Behavioral Therapy, and Mindfulness and Acceptance-Based Therapies
- Assisted with case management for clients
- Collaborated with case managers, psychiatrist, and external healthcare organizations to coordinate care for clients
- Co-led psychosocial support group for individuals affected by events in Myanmar related to military coup and oppression of minority groups
- Conducted N-648 assessment and drafted report in collaboration with psychologist at clinic
- Worked with community navigators and interpreter services in conducting therapy with non-English speaking clients
- Provided direct supervision of externship student, including feedback and support on cases, review of clinical documentation, education on policies and procedures, and professional development
- Led clinic group supervision for externs, interns, and postdoctoral fellow, including facilitating group discussion of cases, providing support to group supervision participants, and assisting with coordination of guest presentations
- Supervised by Dr. Geri Tien (primary supervisor), Dr. Eri Asano (backup supervisor), and Dr. Jan Jenkins (N-648 assessment supervisor)

Clinical Psychology Doctoral Intern on the Adult Intensive Services Minor Rotation (Telehealth) at Aurora Mental Health Center, Aurora, CO, February 2021-July 2021

- Conducted comprehensive intake assessments with adults with Serious and Persistent Mental Illness diagnoses and/or Intellectual and Developmental Disability diagnoses and caregivers presenting for treatment with team using semi-structured interviews consistent with Medicaid requirements
- Conducted individual and family outpatient therapy with adult clients and their caregivers using techniques from evidenced-based treatments, including Cognitive-Behavioral Therapy, Behavioral Activation for Depression, and Mindfulness and Acceptance-Based Therapies
- Conducted crisis assessment and provided crisis support for clients experiencing suicidal and homicidal ideation
- Collaborated with host home providers, psychiatrists, case managers, and external healthcare organizations to coordinate care for clients
- Co-led Dialectical Behavior Therapy Group for clients connected with team
- Supervised by Dr. Dawn O'Neil (Community Living Program supervisor) and Dr. Jennifer Lucchesi (Aurora Center for Life Skills supervisor)

Clinical Psychology Doctoral Intern on the Southeast Adult Counseling Team Minor Rotation (Telehealth) at Aurora Mental Health Center, Aurora, CO, August 2020-January 2021

- Conducted comprehensive intake assessments with adults presenting for treatment with team using semi-structured interviews consistent with Medicaid requirements
- Conducted individual outpatient therapy with adult clients using techniques from evidenced-based treatments, including Integrative Therapy, Cognitive-Behavioral Therapy, Dialectical Behavior Therapy, and Mindfulness and Acceptance-Based Therapies
- Collaborated with psychiatrists, case managers, and other clinicians to coordinate care for clients
- Supervised by Dr. Erika McElroy

Clinical Graduate Teaching Assistant at University of Louisville Psychological Services Center, Louisville, KY, May 2019-July 2020

- Conducted administrative and management tasks for operating department outpatient training clinic, including scheduling, payment, and facilitating adherence to clinic operating procedures
- Coordinated initiation of treatment and assessment services for individuals contacting clinic, including individuals in crisis
- Provided peer-supervision to graduate student therapists, including assistance with intakes, therapy services, assessments, and managing crisis situations
- Co-designed and co-taught Clinical Interviewing graduate course for first year doctoral students on topics such as problem identification, goal identification, and the Cultural Formulation Interview
- Co-taught Intellectual and Cognitive Assessment graduate course for first year doctoral students

- Supervised by Dr. Bernadette Walter

Graduate Student Therapist on Integrative Interventions Team at University of Louisville Psychological Services Center, Louisville, KY, August 2017-July 2020

- Conducted intake interviews with adults presenting for treatment at clinic using semi-structured interviews and Cultural Formulation Interview
- Conducted individual outpatient therapy with adult clients using techniques from evidenced-based treatments, including Integrative Therapy, Cognitive-Behavioral Therapy, Behavioral Activation for Depression, Dialectical Behavior Therapy, and Acceptance and Commitment Therapy
- Supervised by Dr. Richard Lewine

Graduate Student Examiner at University of Louisville Psychological Services Center, Louisville, KY, August 2017-July 2020

- Conducted psychological assessments with children and adults, including the Wechsler Intelligence Scale for Children – Fifth Edition, the Wechsler Adult Intelligence Scale – Fourth Edition, the Wechsler Individual Achievement Test – Third Edition, the Minnesota Multiphasic Personality Inventory – 2, the Millon Adolescent Clinical Inventory, the Conners' Continuous Performance Test – 3rd Edition, and the Structured Clinical Interview for DSM-5 Disorders
- Wrote integrative assessment reports related to Advanced Program testing, diagnostic assessments, learning disorder assessments, and attention-deficit/hyperactivity disorder assessments
- Provided interpretation and feedback on assessment results and reports to clients and families
- Supervised by Dr. Bernadette Walter, Dr. David Wunsch, and Dr. Richard Lewine

Graduate Student Therapist at Survivors of Torture Recovery Center, Louisville, KY, January 2018-December 2018

- Conducted individual outpatient therapy with adult clients from refugee population using techniques from evidence-based treatments, including Cognitive-Behavioral Therapy, Mindfulness and Acceptance-Based Therapy, and Cognitive Processing Therapy
- Assisted with case management for clients
- Worked with interpreter services in conducting therapy with non-English speaking clients
- Supervised by Dr. Susan Rhema and Dr. Richard Lewine

Graduate Student Therapist on Children with ADHD and Related Difficulties Team at University of Louisville Psychological Services Center, Louisville, KY, September 2016-April 2017

- Conducted intake interviews with children and families presenting for treatment at clinic using semi-structured interviews
- Conducted outpatient therapy with child clients and families using evidence-based treatment techniques, including Behavioral Therapy
- Co-facilitated group therapy for children with ADHD and emotion regulation difficulties and their families
- Supervised by Dr. Paul Rosen

Graduate Student at Refugee Mental Health Clinic, Louisville, KY, July 2016-August 2016

- Observed assessment of anxiety disorders among refugee population
- Began training in use of Anxiety Disorders Interview Schedule as part of measure validation study
- Supervised by Dr. Monnica Williams

RESEARCH EXPERIENCE

Research Interests: Cultural Diversity, Mental Health Disparities, Adversity, Low-SES Populations, Coping, Academic Functioning, Resilience, Post-Traumatic Stress Disorder, Minority Stress, Network Theory

Graduate Student Researcher in the Thought Disorder, Affect, and Critical Thinking Lab, Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY, August 2017-May 2022

- Completed dissertation research on coping flexibility and academic resilience among low-SES college students
- Research on risk and resilience factors impacting mental health and educational achievement in low-income college student population
- Research on intersections of poverty, marginalized identities, and mental health among low-income college students
- Principal Investigator: Dr. Richard Lewine

Graduate Student Researcher in the Eating Anxiety Treatment Lab, Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY, July 2016-May 2017

- Comorbidity research focusing on eating disorders, anxiety, depression, and PTSD
- Research on cultural variation in eating disorders and social anxiety
- Network analysis using cross-sectional, longitudinal, and ecological momentary assessment data
- Imaginal exposure research testing the effectiveness of experimental clinical intervention
- Managed undergraduate research assistants in completion of tasks necessary for lab operations
- Principal Investigator: Dr. Cheri Levinson

Research Assistant in the Attachment and Health Lab, School of Public Health/Department of Developmental Psychology, University of Michigan, Ann Arbor, MI, October 2014-June 2016

- Reviewed literature pertaining to attachment and health among racial/ethnic and sexual minority populations
- Managed participant scheduling, tracking, and compensation
- Conducted data collection via computer-assisted baseline survey and semi-structured debrief interview, explained daily diary and salivary sample collection, and assembled salivary sample collection kits
- Worked on peer-reviewed publications on minority stress

- Principal Investigators: Dr. Stephanie Cook and Dr. Justin Heinze

Research Assistant in the Asian American Mental Health and Psychology Lab, Asian American Psychotherapy Dropout Study, Department of Clinical Psychology, University of Michigan, Ann Arbor, MI, January 2015-August 2015

- Reviewed literature on Asian American psychotherapy disengagement and qualitative methodologies
- Helped identify and evaluate methodologies for qualitative data analysis
- Conducted data coding following qualitative study design
- Collaborated with Principal Investigator and other research assistants to refine qualitative coding themes
- Principal Investigators: Jackie H. J. Kim, MS and Dr. Donna Nagata

COMPUTER AND STATISTICAL SKILLS

SPSS Statistics
Zotero

REDCap
Network Analysis

R Statistical Software
SmartCare EHR

PUBLICATIONS

Lewine, R., Warnecke, A., Davis, D., Sommers, A., Manley, K. & **Calebs, B.** (2019). Gender and affect: Linguistic Predictors of successful academic performance among economically disadvantaged first year college students. *International Journal of the Scholarship of Teaching and Learning*.

Brosos, L. C., **Calebs, B.**, & Levinson, C. A. (2019). Ethnic variance between Asian and European Americans in a six month prospective model of eating disorder and social anxiety symptom comorbidity. *Eating Disorders: The Journal of Treatment and Prevention*.

Vanzhula, I., **Calebs, B.**, Fewell, L., & Levinson, C. A. (2019). Irritability and concentration difficulties are illness pathways between eating disorder and post-traumatic stress disorder symptoms: Understanding comorbidity with network analysis. *European Eating Disorders Review*.

Wood, E. P., Cook, S. H., & **Calebs, B. J.** (2019). The mediating role of emotion dysregulation in the relation between adult attachment insecurity and depression among young, gay and bisexual men. *International Journal of Sexual Health*.

Cook, S. H., Valera, P., Wood, E. P., **Calebs, B.**, & Wilson, P. A. (2019). Understanding attachment transitions through the lived experiences of young Black gay and bisexual men. *Journal of Sex Research*.

Olatunji, B. O., Levinson, C. A., & **Calebs, B.** (2018). A network analysis of eating disorder symptoms and characteristics in an inpatient sample. *Psychiatry Research*.

Levinson, C. A., Zerwas, S. C., **Calebs, B.**, Forbush, K., Marcus, M., Kordy, H., Hamer, R. M., Hofmeier, S. M., Levine, M., Zimmer, B., Moesner, M., Peat, C., Runfolo, C. D., & Bulik, C. M. (2017). The core symptoms of bulimia nervosa, anxiety, and depression: A network analysis. *Journal of Abnormal Psychology*.

Cook, S. H., **Calebs, B.**, Perry, M., & Hopkins, R. (2017). Stress and health: Examining minority stress and poor health among populations of vulnerable ethnic/racial minority males. In A. Blume (Ed.), *Social issues in living color: Challenges and solutions from the perspective of ethnic minority psychology*. Santa Barbara, CA: Praeger Books.

Cook, S. H., Wilson, P. A., Valera, P., & **Calebs, B.** (2017). Adult attachment as a moderator of the relationship between childhood interpersonal traumatic experiences and depressive symptoms among young Black gay and bisexual men. *Cultural Diversity & Ethnic Minority Psychology*.

Cook, S. H., Juster, R. P., **Calebs, B. J.**, Heinze, J. E., & Miller, A. L. (2017). Diurnal cortisol profiles differ by race/ethnicity among young sexual minority men. *Psychoneuroendocrinology*.

Cook, S. H., & **Calebs, B.** (2016). The Integrated Attachment and Sexual Minority Stress Model: Understanding the role of adult attachment in the health and well-being of sexual minority men. *Behavioral Medicine*.

Cook, S. H., Watkins, D. C., **Calebs, B.**, & Wilson, P. A. (2016). Attachment orientation and sexual risk behavior among young Black gay and bisexual men. *Psychology & Sexuality*.

CONFERENCE PRESENTATIONS

Calebs, B. J., Burke, N. K., & Lewine, R. R. (November 2019). Mental Health, Stressful Life Events, and Intersectionality in a Sample of Low-SES College Students. Poster presented by **B. J. Calebs** at the International Society for Traumatic Stress Studies 35th Annual Meeting, Boston, MA.

Mier-Chairez, J., **Calebs, B.**, & Woodruff-Borden, J. (November 2018). Fatalism and its Association with Anxiety and Worry in Latinx and Non-Latinx White Adults: A Mechanical Turk Study. Paper presented by J. Mier-Chairez at the 2018 Association for Behavioral and Cognitive Therapies Convention, Washington, DC.

Vanzhula, I. A., Christian, C., **Calebs, B.**, & Levinson, C. A. (April 2018). Irritability and Concentration Difficulties Link Eating Disorder and PTSD Symptoms: Understanding Comorbidity With Network Analysis. Poster presented by I. A. Vanzhula at the International Conference of Eating Disorders, Chicago, IL.

Christian C., Vanzhula I. A., **Calebs, B.**, Brosof, L. C., Michelson, L. P., Stratigis, K. Y., Hicks-Chambers, A., Toon, A. E., Fewell, L. K., & Levinson, C. A. (February 2018). Effectiveness of Online Imaginal Exposure Therapy for the Treatment of Eating Disorders. Poster presented by EAT Lab at Posters at the Capitol, Frankfort, KY.

Calebs, B., & Levinson, C.A. (November 2017). The Relationship between Cultural Self-Construal and Anxiety Symptoms: A Network Analysis. Poster presented by **B. Calebs** at the 2017 Association for Behavioral and Cognitive Therapies Convention, San Diego, CA.

Calebs, B., Fewell, L., & Levinson, C. A. (April 2017). Eating Disorder and Post-Traumatic Stress Disorder Symptoms in a Clinical and Non-Clinical Sample: Understanding Comorbidity through Network Analysis. Poster presented by **B. Calebs** at the 2017 Anxiety and Depression Association of American Conference, San Francisco, CA.

Kim, J. H. J., Park, H., **Calebs, B.**, Lee, G., Yiu, W., & Nagata, D. K. (August 2015). A mixed-method naturalistic examination of Asian American psychotherapy disengagement. Poster presented by J. H. J. Kim at the 2015 Asian American Psychological Association Annual Convention, Toronto, ON.

Calebs, B., & Hopkins, R. (April 2015). Attachment, stress, and health among young, gay and bisexual men. Poster presented by **B. Calebs** and R. Hopkins at the Undergraduate Research Opportunity Program Spring Research Symposium 2015, Ann Arbor, MI.

COMMUNITY PRESENTATIONS

Presenter of talk on Stress and Healthy Eating with Kentucky Air National Guard, Louisville, KY, April 2017

- Provided participants with information regarding the links between stress, unhealthy eating, and stress-reduction techniques

TEACHING EXPERIENCE

Graduate Teaching Assistant for Undergraduate Abnormal Psychology Course at University of Louisville, Louisville, KY, August 2018-May 2019

- Graded student assignments including journal activities, case studies, and exams
- Guest lectured on PTSD and resilience

AmeriCorps VISTA Summer Program Associate at Americana World Community Center, Louisville, KY, May 2017-July 2017

- Worked in community center setting with refugee and immigrant youth population
- Co-taught 6th grade class in content areas such as digital literacy, language arts, leadership, life skills, and physical education
- Helped with lesson implementation and classroom management for 4th and 5th grade ESL classes
- Helped with planning and preparation for Americana's annual festival

INTERNATIONAL EXPERIENCE

Study Abroad Student in Grenoble, France through the Center for Global and Intercultural Study, University of Michigan, Ann Arbor, MI, May 2015-June 2015

- Attained increased comprehension and communication skills in the French language through intensive course
- Acquired greater global awareness and cultural competence through immersion experiences including living with French host family and engaging in organized cultural activities

WORK EXPERIENCE

Catering Associate at Mission Hospital, Asheville, NC, November 2011-August 2014

- Provided meals to patients in the Cardiovascular and Trauma Care Units
- Collaborated with hospital staff to provide direct patient support
- Cooperated with others in a large, fast paced health care environment
- Respected patient privacy following HIPAA guidelines
- Led by example to foster teamwork amongst hospital staff

Co-Founder and Farmer at Barn Swallow Farm, Columbia, KY, 2008-2010

- Started and maintained a 23-acre permaculture-inspired farm
- Managed a booth in a regional farmers market selling organic produce

VOLUNTEER EXPERIENCE

After-School Program Volunteer at Americana World Community Center, Louisville, KY, October 2017-May 2018

- Volunteered in community center setting with refugee and immigrant youth population
- Assisted participants with homework assignments and completion of program activities

Participant in National Eating Disorder Association Walk, Louisville, KY, September 2016 and September 2017

- Participated in walk to raise awareness about eating disorders

Language Partner at Freedom House, Detroit, MI, September 2015-June 2016

- Shared cultural knowledge and English language skills with refugee during asylum application process

Co-Founder and Organizer of the Louisville Intercommunal Network for Education (LINE Free School), Louisville, KY, 2006-2008

- Started and coordinated a network of free classes and workshops
- Prepared and distributed monthly free school event calendar

Volunteer member of Common Ground Collective, New Orleans, LA, February 2006

- Performed relief work to those affected by Hurricane Katrina
- Helped establish a community bicycle project

REFERENCES

Richard Lewine, Ph.D.

- Address: 343 Life Sciences Building, University of Louisville, Louisville, KY, 40292
- Phone: (502) 852-3243
- Email: rich.lewine@louisville.edu

Bernadette Walter, Ph.D.

- Address: 210 Davidson Hall, University of Louisville, Louisville, KY, 40292
- Phone: (502) 852-8270

- Email: bernadette.walter@louisville.edu

Nai Chieh (Geri) Tien, Ph.D., LP, LMFT

- Address: Asian Pacific Development Center, 1537 Alton St, Aurora, CO, 80010
- Phone: (303) 923-2920
- Email: geritien@apdc.org